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2002

EPA Superfund
Record of Decision:

SCIENTIFIC CHEMICAL PROCESSING
EPA ID: NJD070565403
OU 02
CARLSTADT, NJ
08/12/2002

DECLARATION STATEMENT

SITE NAME AND LOCATION

Scientific Chemical Processing(EPA ID#-NJD070565403) Carlstadt Township, Bergen County, New Jersey, Operable Unit 2

STATEMENT OF BASIS AND PURPOSE

This decision document presents the Selected Remedy for the contaminated soil on the Scientific Chemical Processing Site located in Carlstadt Township, Bergen County, New Jersey. The Selected Remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act, as amended, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan. This decision is based on the Administrative Record file for the site.

The State of New Jersey concurs with the Selected Remedy.

ASSESSMENT OF THE SITE

The response action selected in this Record of Decision is necessary to protect public health or welfare or the environment from actual or threatened release of hazardous substances from the site into the environment.

DESCRIPTION OF THE SELECTED REMEDY

The Selected Remedy described in this document involves the remediation of an area of highly-contaminated sludge on the site (“Hot Spot” Area) and improvements to the existing interim remedy for the remainder of the Fill Area. The Fill Area includes all soils, sludges and groundwater above the shallow clay layer and inside the existing containment slurry wall. Construction of the interim remedy was completed in 1992 pursuant to a 1990 Record of Decision. Additional remedial actions are planned to address contaminated groundwater outside the Fill Area and sediments within Peach Island Creek.

The major components of the Selected Remedy follow:

- Air stripping of the Hot Spot area until levels of Volatile Organic Compounds are reduced to whichever is more stringent: the average VOC levels in Fill Area outside the Hot Spot, or to a level where interference with stabilization will not occur. VOCs released during treatment will be collected and treated on site, or adsorbed to assure no negative impacts to the surrounding community.

- Soil stabilization of the Hot Spot using cement and lime, so that the Hot Spot is solidified to performance standards to be developed during the design phase of the remedy. The solidification and stabilization will effect containment of polychlorinated byphenols (PCBs) and other non- volatile or semi-volatile contaminants

- Installation of a landfill cap over the entire Fill Area. The cap will consist of a 2-foot thick “double containment” cover system, which will be constructed over the entire area currently circumscribed by the existing slurry wall.

- Improvement of the existing, interim groundwater recovery system, which consists of above-ground piping, and recovery wells screened, in the Fill Area. The improvements will include the installation of new extraction wells along the perimeter of the site, construction of underground clean utility corridors for the wells, and piping and electrical system to allow more flexibility for future uses of the site. The extracted groundwater will either be collected in the existing above-ground tank for disposal, or pumped, via sewer connection, to the Bergen County Publicly Owned

Treatment Works (POTW) for treatment.

- The existing sheet pile wall along Peach Island Creek, which protects the slurry wall along the riparian side of the Fill Area, will be improved and upgraded.

While EPA believes the Hot Spot treatment portion of the Selected Remedy will be effective, if appropriate performance standards for treatment, solidification and containment are not met, then removal of the Hot Spot, as described in the Record of Decision’s Alternative SC-3, will be performed.

DECLARATION OF STATUTORY DETERMINATIONS

Part 1: Statutory Requirements

The Selected Remedy is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to the remedial action, is cost-effective, and utilizes permanent solutions and alternative treatment or resource recovery technologies to the maximum extent practicable.

Part 2: Statutory Preference for Treatment

The Selected Remedy satisfies the statutory preference for treatment as a principal element of the remedy.

Part 3: Five-Year Review Requirements

The Selected Remedy allows hazardous substances, pollutants or contaminants to remain at this site above levels which would allow for unlimited use and unrestricted exposure. Pursuant to CERCLA Section 121 (c), EPA is required to conduct five-year reviews of the remedies selected at this site. The first five-year review was completed on September 30, 1998. This decision document reviewed the remedy selected in the 1990 Record of Decision, designated the first operable unit (OU1), and subsumes and replaces it with a final on-site remedy, designated OU2. This Record of Decision constitutes the second five-year review of the site. As indicated elsewhere, this remedy is expected to be protective of human health and the environment when it is fully implemented. The next five- year review will be conducted within five years of the date of this Record of Decision.

Since the remedy selected in this decision document has not been implemented and the remedy for groundwater and off-site contamination (designated OU3) has not been selected, the exposure pathways that could result in unacceptable risks are being controlled by measures which limit current property and groundwater uses.

ROD DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary section of this Record of Decision. Additional information can be found in the Administrative Record file for site.

- Chemicals of concern and their respective concentrations may be found in the “Summary of Site Characteristics” section.

- Baseline risk represented by the chemicals of concern may be found in the “Summary of Site Risks” section.

- A discussion of source materials constituting principal threats may be found in the “Principal Threat Waste” section.

- Current and reasonably anticipated future land use assumptions are discussed in the “Current and Potential Future Site and Resource Uses” section.

- Estimated capital, annual operation and maintenance, and total present worth costs are discussed in the "Description of Remedial Alternatives" section.

- Key factors that led to selecting the remedy (i.e., how the Selected Remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, emphasizing criteria key to the decision) may be found in the "Comparative Analysis of Alternatives" and "Statutory Determinations" sections.

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Jane M. Kenny Date

Regional Administrator

Region II

DECISION SUMMARY
Operable Unit Two
Scientific Chemical Processing Site
Carlstadt, Bergen County, New Jersey

United States Environmental Protection Agency
Region II
July 2002

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SITE NAME LOCATION AND DESCRIPTION

The six-acre Scientific Chemical Processing (SCP) Site is located at 216 Paterson Plank Road in Carlstadt, New Jersey. The Site is a corner property, bounded by Paterson Plank Road on the south, Gotham Parkway on the west, Peach Island Creek on the north and an industrial facility on the east (Figure 1). The land use in the vicinity of the Site is classified as light industrial by the Borough of Carlstadt. The establishments in the immediate vicinity of the Site include a bank, stables, warehouses, freight carriers, and service sector industries. There is a residential area located approximately 6,000 feet northwest of the Site.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

Early Operations

The land on which the SCP Site is located was purchased in 1941 by Patrick Marrone who used the land for solvent refining and solvent recovery. Mr. Marrone eventually sold the land to a predecessor of Inmar Associates, Inc. Aerial photographs from the 1950s, 1960s and 1970s indicate that drummed materials were stored on the Site. On October 31, 1970, SCP Inc. leased the Site from Inmar Associates. SCP used the Site for processing industrial wastes from 1971 until the company was shut down by court order in 1980.

While in operation, SCP received liquid byproduct streams from chemical and industrial manufacturing firms, then processed the materials to reclaim marketable products, which were sold to the originating companies. In addition, liquid hydrocarbons were processed to some extent, then blended with fuel oil. The mixtures were typically sold back to the originating companies, or to cement and aggregate kilns as fuel. SCP also received other wastes, including paint sludges, acids and other unknown chemical wastes.

Site Discovery, State and Federal Response Actions

In 1983, the Site was placed on the National Priorities List (NPL). Between 1983 and 1985, the New Jersey Department of Environmental Protection (NJDEP) required the site owner to remove approximately 250,000 gallons of wastes stored in tanks, which had been abandoned at the Site.

In May 1985, EPA assumed the lead role in the response actions, and issued notice letters to over 140 Potentially Responsible Parties (PRPs). EPA offered the PRPs an opportunity to perform a Remedial Investigation and Feasibility Study (RI/FS) for the Site. The purpose of an RI/FS is to determine the nature and extent of a site’s contamination, and then to develop remedial alternatives which address that contamination. In September 1985, EPA issued Administrative Orders on Consent to the 108 PRPs who had agreed to conduct the RI/FS. Subsequently, in October 1985, EPA issued a Unilateral Order to 31 PRPs who failed to sign the Consent Order. The Unilateral Order required the 31 PRPs to cooperate with the 108 consenting PRPs on the RI/FS. In the fall of 1985, EPA also issued an Administrative Order to Inmar Associates, requiring the company to remove and properly dispose of the contents of five tanks containing wastes contaminated with polychlorinated biphenyls (PCBs) and numerous other hazardous substances.

Inmar removed four of the five tanks in 1986. The fifth tank was not removed at the time due to the high levels of PCBs and other contaminants found in that specific tank, and the unavailability of disposal facilities capable of handling those wastes. The fifth tank and its contents were subsequently removed and disposed of by the PRPs in February 1998.

The PRPs initiated the RI/FS in April 1987. In March 1990, a final RI was completed. The RI focused on the most heavily contaminated zone at the Site which included the contaminated soils, sludges and shallow groundwater down to the clay layer (hereinafter, this zone will be referred to as the “Fill Area”). The RI also collected data from the deeper groundwater areas. The deeper areas consist of the till aquifer, which lies just under the Fill Area’s clay layer, and the bedrock aquifer which underlies the till aquifer. Groundwater within both the till aquifer and bedrock aquifer was found to be contaminated with site-related compounds. The RI also found that the adjacent Peach Island Creek’s surface water and sediments were impacted by contaminants similar to those found in the Fill Area.

Prior to issuing a final RI, an FS was completed in 1989. Based on data from the draft RI, the FS analyzed alternatives for the Fill Area groundwater and sludge/soils. The alternatives analyzed included the combined use of a slurry wall, dewatering, caps, vacuum extraction and in-situ stabilization technologies. The results of the FS indicated that, although there seemed to be several potential methods or combinations of methods to remedy the Fill Area soil and sludges, there were uncertainties regarding the relative effectiveness of the various technologies. Consequently, EPA made a decision that treatment alternatives needed further assessment. In the meantime, interim measures were necessary to contain and prevent exposure to the Fill Area contaminants. Therefore, based on the findings of the RI and FS, a Record of Decision (ROD) for an interim remedy for the Fill Area was issued by EPA in September 1990.

Operable Unit 1 Remedy

EPA typically addresses sites, particularly the more complex ones, in separate phases and/or operable units. In developing an overall strategy for the SCP Site, EPA has identified the interim Fill Area remedy as Operable Unit 1 (OU1), the final Fill Area remedy as OU2, and the groundwater/Peach Island Creek remedy as OU3.

As stated previously, EPA issued a ROD on September 14, 1990 describing the selection of an interim remedial action for the Fill Area to prevent exposure to site soils and prevent the contaminated groundwater within the Fill Area from migrating off the property. The interim remedy was constructed from August 1991 through June 1992 by the PRPs for the Site pursuant to a Unilateral Administrative Order, dated September 28, 1990, and consists of the following:

1. A lateral containment wall comprised of a soil-bentonite slurry with an integral high density polyethylene (HDPE) vertical membrane which is keyed into the clay layer and circumscribes the property;

2. A sheet pile retaining wall along Peach Island Creek. The retaining wall was installed to facilitate construction of the slurry wall. Regular monitoring has shown that the retaining wall has remained stable since completion of the slurry wall installation;

3. A horizontal infiltration barrier consisting of high density polyethylene covering the property;

4. An extraction system for shallow groundwater consisting of seven (since reduced to five) wells screened in the Fill Area, which discharge to an above-ground 10,000 gallon tank via above-grade pipes. The water from the tank is disposed of off-site;

5. A chain link fence which circumscribes the property; and

6. Quarterly (since made annual) groundwater monitoring for metals and organics. Operation and Monitoring reports on the current conditions at the Site are submitted to EPA on a monthly basis.

The interim remedy has effectively mitigated the risks from direct contact with Fill Area contamination and the spread of Fill Area contamination since its implementation in 1992.

Operable Unit 2 and Operable Unit 3 Remedy

While implementing the interim remedy (i.e., OU1), EPA continued to oversee additional

RI/FS work which would provide information to prepare Records of Decision for OU2 and OU3. In March 1994, the PRPs presented to EPA nine remedial technologies which the PRPs considered potentially applicable to the Site. In December of that year, EPA requested that the PRPs further review and reduce the list of potential technologies. In 1995, the PRPs submitted a Focused Feasibility Study Workplan (FFS) to evaluate both the groundwater contamination (to be addressed in OU3) and the following reduced list of remedial technologies for the Fill Area; 1) containment; 2) “Hot Spot” removal; 3) stabilization; 4) bioremediation; and 5) thermal desorption.

The FFS identified a number of severe limitations and complex issues associated with the site-wide ex-situ remedial options, including difficulties associated with the large amount of massive construction and demolition debris contained within the Fill Area. These findings are presented in detail in the 1997 Focused Feasibility Investigation Workplan (FFSI). The FFSI established the following working definition for the “Hot Spot” area:

- An area where, if chemical constituents were removed and/or treated, the site-wide risk would be reduced by over an order of magnitude; and

- An area small enough to be considered separately from remediation of the entire Fill Area.

Based on previous findings, it was determined that sludge in one portion of the Fill Area fit the definition of “Hot Spot” (see Figure 2). The FFSI also determined that treatability studies were necessary to determine the best in-situ methods to address this Fill Area sludge (i.e., the Hot Spot area). In 1998, the PRPs submitted a Treatability Testing Workplan to test these technologies. The results of the testing were submitted to EPA in the July 2000 Treatability Study Final Report.

Additional groundwater and surface water sampling will continue to be conducted in preparation for the development of remedial alternatives for groundwater contamination and Peach Island Creek. Based on the existing information relating to the Fill Area, EPA has elected to move forward with the permanent remedy for OU2 independent of the OU3 remedy, which will be the subject of a future ROD. Thus, the following summary focuses on the OU2 efforts.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The Proposed Plan and the supporting documentation for OU2 were released to the public for comment on August 15, 2001. These documents were made available to the public at the EPA Administrative Record File Room, 290 Broadway, 18th Floor, New York, NY; and at the William E. Demody Free Public Library, 420 Hackensack St, Carlstadt, NJ.

On August 15, 2001, EPA issued a notice in the Bergen County Record, which contained a summary of EPA’s Proposed Remedy for OU2 and information relevant to the public comment period for this site, including the duration of the comment period, the date of the public meeting and the availability of the administrative record. The public comment period began on August 15, 2001 and initially ended on September 15, 2001, but was extended through a public notice in the Bergen County Record through October 25, 2001. The extension was given to allow mail which may have been lost or delayed due to events on September 11, 2001 to be resubmitted. A public meeting was held on August 23, 2001, at the Carlstadt Borough Hall located at 500 Madison St., Carlstadt, NJ. The purpose of the meeting was to inform local officials and interested citizens about the Superfund process, to discuss the Proposed Plan, to receive comments on the Proposed Plan, and to respond to questions from area residents and other interested parties. In general, the public supported the Agency’s proposed remedy, Alternative SC-5; Air Stripping, Capping, Solidification/Stabilization and Shallow Groundwater Collection. Responses to comments received at the public meeting and in writing during the public comment period are included in the Responsiveness Summary (Appendix V).

SCOPE AND ROLE OF RESPONSE ACTION

As with many Superfund sites, the problems at the SCP Site are complex. As a result, EPA has organized the work into three distinct phases or operable units. The name of each operable unit and the portions of the Site that each operable unit includes are listed below:

— Operable Unit 1: Fill Area, interim remedy.

— Operable Unit 2: Fill Area, permanent remedy.
— Operable Unit 3: Groundwater contamination outside the defined Fill Area and the Peach Island Creek.

OU2, the subject of this ROD, addresses the Fill Area contaminants. As indicated in the 1990 OU1 ROD, the interim remedy will be a key component of the OU2 final Fill Area remedy.

SUMMARY OF SITE CHARACTERISTICS

The results of the RI indicate that the Site stratigraphy consists of the following units, in descending order with depth: earthen fill material (average thickness of approximately 8.4 feet across the Site); peat (thickness ranging from 0 to approximately 1.8 feet across the Site); gray silt (average thickness ranging from 0 to 19 feet across the Site); till (consisting of sand, clay and gravel, average thickness of approximately 20 feet across the Site); and bedrock.

The Site is underlain by three groundwater units which are described as the “shallow aquifer,” the “till aquifer” and the “bedrock aquifer” in descending order with depth. The natural water table is found in the shallow aquifer at a depth of approximately two feet below the land surface. The till aquifer consists of the water-bearing unit between the clay and the bedrock. The bedrock aquifer is the most prolific of the three aquifers and is used regionally for potable and industrial purposes. Results of hydrogeologic tests conducted during the RI indicate that the three aquifers are hydraulically connected. Chemical analyses of groundwater from the three aquifers provide further support to this finding. Specifically, chemical data collected during the RI demonstrated that contaminants, including chloroform, 1,2-dichloroethane, and vinyl chloride from the shallow aquifer have migrated across the clay-silt layer into the till and bedrock aquifers.

Physical Characteristics

Test pit and boring investigations conducted during the RI defined the Fill Area. Twenty-three test pits were dug and thirty-one soil borings were taken. In addition, eighteen soil borings were collected around the perimeter of the Site as part of the OU1 slurry wall design investigation. Based on these data, the following conclusions can be drawn:

1) The Fill Area material consists of a variety of construction and demolition (C&D) debris including large blocks of reinforced concrete and rock, steel beams, timber, stumps, scrap metal, fencing, piping, cable, brick, ceramic, concrete masonry block, rock/concrete rubble, etc. Finer-grained materials such as sands, gravels, silts, clays, and sludge-like material were identified mixed within the C&D debris.

2) Based on a review of the Test Pit Study Report and photographs of subsurface material, an estimated 60% of the material is C&D debris and the remaining material consists of finer-grained particles mixed with the C&D debris.

Chemical Characteristics

During the RI, numerous chemical constituents were detected in the Fill Area material, including volatile organic compounds (VOCs) such as benzene, tetrachloroethylene and toluene; semi-volatile organic compounds (SVOCs) (generally polynuclear aromatic hydrocarbons); a small number of pesticides such as aldrin and dieldrin; PCBs; and metals such as copper and lead. For a list of the chemicals of concern for OU2 and their respective maximum concentrations, please see Table 2.

Sludge Area Investigation

An investigation of a portion of the Fill Area was conducted pursuant to the 1997 FFSI Work Plan and was designed to gather data on the nature and extent of contaminated sludge in the vicinity of one of the RI's borings, namely boring B-1 (see Figure 2). This sludge area was later determined to meet the definition of a Hot Spot. Therefore, the terms "sludge area" and "Hot Spot" will be used interchangeably through the remainder of this ROD. The results of the FFSI are presented in the 1997 FFSI Report. In summary, the investigation confirmed the presence of a discrete area of sludge in the eastern portion of the Site with the following characteristics:

- The sludge area is approximately 4,000 square feet in areal extent and consists predominately of sludge material and fine-grained soil with little debris. A surficial layer of fill, approximately 0.5 to 8 feet thick, overlies the sludge and, based on an average thickness of 10 feet, the volume of sludge is approximately 1,480 cubic yards.

- The levels of contaminants for the sludge area include the highest VOC (e.g., tetrachloroethylene at 4,290 parts per million (ppm) and toluene at 3,380 ppm) and PCB (e.g.,Arochlor 1242 at >15,000 ppm) concentrations detected anywhere on the SCP property.

The contaminated soils and sludges in the Fill Area are considered to be "principal threat wastes" as the chemicals of concern are found at concentrations that pose a potential significant risk. The risk from the sludges in the Hot Spot Area are significantly higher than the remainder of the Site. In addition, the contaminants demonstrated a potential for off-site migration through surface water runoff, prior to placement of the interim cap.

CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

Land Use:

The land use at the Site and in the vicinity of the Site is classified as light industrial by the Borough of Carlstadt. The establishments in the immediate vicinity of the Site include a bank, horse stables, warehouses, freight carriers, and service sector industries. There is a residential area located approximately 6,000 feet northwest of the Site.

Groundwater Uses:

The natural water table is found in the shallow aquifer at a depth of approximately two feet below the land surface. The till aquifer consists of the water-bearing unit between the clay and the bedrock. The bedrock aquifer is the most prolific of the three aquifers and is used regionally for potable and industrial purposes. Results of hydrogeologic tests conducted during the RI indicate that the three aquifers are hydraulically connected. Chemical analyses of groundwater from the three aquifers provide further support for this finding. Specifically, chemical data collected during the RI demonstrated that contaminants including chloroform, 1,2-dichlorethane, and vinyl chloride from the shallow aquifer have migrated across the clay layer into the till and bedrock aquifers.

SUMMARY OF SITE RISKS

Human Health Risk Assessment

A baseline human health risk assessment (HHRA) was conducted to evaluate the potential for current and future impacts of site-related contaminants on receptors at the Site. Receptors include: current/future adult on-site and off-site workers; future construction workers; future adolescent trespassers; future off-site workers; and future adult and child off- site residents (see Table 1). Baseline conditions exclude consideration of the current interim remedial action already in place and institutional controls. Under baseline conditions, the human health cancer risks and non- cancer health hazards are unacceptable. The HHRA supports the decision for taking remedial action at the Site.

The site-specific HHRA evaluated both cancer risks and non-cancer health hazards from exposure to contaminants at the Site. In 1990, as part of the RI/FS, EPA conducted a baseline HHRA for the Site to determine the potential current and future effects of contaminants on human health. The toxicity data, exposure assumptions and the risk characterization were updated in July 2000 to reflect more recent toxicity values and exposure assumptions. The calculated cancer risks and non-cancer health hazards presented in this Record of Decision reflect the values presented in the July 2000 update. The conclusions from this revised HHRA do not change the conclusions from the original analysis, i.e., the cancer risks and non- cancer health hazards to the on-site worker and construction worker are unacceptable.

Since the original HHRA was conducted in 1990, there has been an interim remedy constructed which eliminates direct contact with contaminated soil and any potential releases of contaminated soil into the air. The interim remedy also contains contaminated groundwater in the Fill Area. These actions reduce potential exposures and ultimately the cancer risks and non-cancer health hazards to impacted receptors. The updated baseline HHRA of July 2000 focused on health effects from exposure in the absence of this interim remedy by assuming the potential use of the shallow aquifer for drinking water consumption. This approach, therefore, may overestimate cancer risks and non-cancer health hazards based on the current interim remedy already in place to prevent exposure and the fact that groundwater from the shallow aquifer is not currently used for drinking water purposes. In accordance with EPA’s policies, based on the classification of the shallow groundwater by the New Jersey Department of Environmental Protection as a potable drinking water source, an assessment of potential use of the shallow groundwater was performed to determine the extent of cancer risks and non- cancer health hazards posed by this groundwater in the absence of remedial action.

Table 2 lists the chemicals of concern evaluated at the Site and frequency of detection. Tables 3 and 4 list the toxicity information for the chemicals of concern; i.e., cancer weight of evidence and cancer slope factor and non-cancer reference doses. Other contaminants of concern at the Site which exceeded EPA’s goals for protection, which are one-in-a-million excess cancer risk and non-cancer health hazard index of 1.0, are provided for each receptor and chemical of concern in Tables 5 and 6 respectively. The cancer risks and non-cancer health hazards exceed Superfund’s goal for protection at the Site for the trespasser and the worker scenarios. The HHRA found the principal contaminants of concern based on cancer risks and non-cancer health hazards are PCBs.

Cancer risks and non-cancer health hazards were calculated based on an estimate of the reasonable maximum exposure (RME) expected to occur under current and future conditions at the Site in the absence of any remedial actions, including the current interim action. The RME is defined as the highest exposure that is reasonably expected to occur at a Site. EPA also estimated cancer risks and non-cancer health hazards based on central tendency (CT), or average exposures at the Site in the absence of remedial action. The following discussion summarizes the HHRA with respect to the basic steps of the Superfund HHRA process: 1) Data Collection and Analysis, 2) Exposure Assessment, 3) Toxicity Assessment and 4) Risk Characterization.

Data Collection and Analysis

The HHRA updated the 1990 baseline human health risk assessment as part of the RI/FS, using the maximum concentrations of PCBs and other contaminants of concern in soil and groundwater. The HHRA also modeled concentrations of contaminants of concern in air impacting off-site residents and workers. The information on concentrations in the media to which people may be exposed are then combined with information on exposure (see Section 8.1.2) frequency and duration of exposure to calculate cancer risks and non-cancer health hazards.

Chemicals of Concern (Table 1): Total PCBs, a number of metals and several organic compounds in soils and the groundwater directly under the Site were identified as chemicals of concern. They pose the greatest potential cancer risk and non-cancer health hazards to humans at the Site. PCBs were found in Fill Area soils at a maximum concentration of 15,100 mg/kg (ppm) in surface soil, 400 ppm in soils 4 to 6 feet deep, 1,400 ppm in soils 6 to 8 feet deep, and 1,300 ppm. in the deeper Fill Area soils. PCBs were also found in the shallow groundwater at concentrations of 17 ppm. PCBs are a group of 209 individual chlorinated biphenyls compounds (known as congeners) with varying health effects. PCBs are classified by EPA as probable human carcinogens. Some PCBs also have non- cancer health effects, based on animal studies, including reduced birth weight and impacts on the immune system.

VOCs were found in the soils and the groundwater within the shallow watertable aquifer. Maximum total VOC concentrations in the Fill Area soils were 9,000 ppm at 2 to 4 feet deep, 29,200 ppm at 6 to 8 feet deep, and 36,000 ppm at 10 to 12 feet deep. The VOCs of concern and their toxicity information are provided in Table 2 through Table 4. In addition to carcinogenic potential, the chemicals listed in the tables may also cause non-cancer health effects including impacts on the liver and blood at high doses.

Metals found at the Site include arsenic and lead. Arsenic is a known human carcinogen, while lead is classified as a probable human carcinogen. Lead has been shown to cause neurotoxic effects in children.

The concentration of PCBs, and other chemicals identified above, in the environmental media at the point of potential human contact is referred to as the exposure point concentration (EPC). Estimates of the EPC represent the concentration term used in the exposure assessment component of the quantitative risk evaluation (Table 2). EPCs for PCBs and other chemicals are provided for soil and groundwater and estimated concentrations in air for the off-site worker and resident. The EPCs for PCBs in each of these media are generally based upon the maximum concentration from the 1990 sampling and modeled projections of future concentrations in air for the RME and CT individuals and are consistent with Hot Spot analyses.

Exposure Assessment

The exposure assessment evaluates exposure pathways by which people might be exposed to the contaminants of concern in different media (e.g., soil, groundwater, air). Factors relating to the exposure assessment include, but are not limited to, the concentrations that people might be exposed to and the potential frequency and duration of exposure.

Conceptual Site Model: Table 1 provides the rationale for inclusion or exclusion of significant exposure pathways. Based on the land-use, the cancer risks and non- cancer health hazards were evaluated for current/future adult on-site workers; future construction workers; future adolescent trespassers; future off-site workers; and future adult and child off-site residents. The HHRA did not evaluate consumption of contaminated groundwater by off-site residents based on the anticipated evaluation of this pathway during OU-3. Cancer risks and non-cancer health hazards to a young child (0-6 years of age) trespassing on the site were not evaluated based on the problems associated with access that would not permit this activity. It should be noted that the nearest off-site resident is currently about 6,000 feet from the Site and the screening level analysis of this data indicates it is below levels of concern. The potential exposure pathways evaluated included: ingestion and dermal contact with contaminated surface and subsurface soils; inhalation of volatilized contaminants and dust, and ingestion of shallow on- site groundwater.

Exposed Populations: Potentially exposed populations include adults (over 18 years old) and adolescent trespassers (aged 7 to 18 years old). The standard EPA default factors were used for body weight (e.g., 15 kgs for a young child and 70 kgs for an adult) and standard default exposure factors were used for ingestion of soil, dermal contact, exposure frequency, and exposure duration in the calculation of cancer risks and non- cancer health hazards.

Toxicity Assessment

The toxicity assessment determines the types of adverse health effects associated with PCBs and other chemical exposures and the relationship between the magnitude of exposure (dose) and severity of adverse effects (response). Potential health effects for PCBs and other contaminants of concern include the risk of developing cancer over a lifetime. Other non-cancer health effects such as changes in the normal functions of organs within the body (e.g., changes in the effectiveness of the immune system) are also associated with PCB exposure based on animal studies. Non-cancer health effects associated with other contaminants of concern include effects on the liver, kidney, blood, reductions in birth weight, and effects on other organs.

Sources of Toxicity Information: The HHRA used the current consensus toxicity values for PCBs from EPA's Integrated Risk Information System (IRIS) in 2000 to evaluate the cancer risk and non-cancer health effects of PCBs and other chemicals. IRIS provides the primary database of chemical-specific toxicity information used in Superfund risk assessments. The HHRA used toxicity information for several chemicals from EPA's 1997 Health Effects Assessment Summary Tables where IRIS data was not available.

Cancer: EPA has determined that PCBs cause cancer in animals and probably cause cancer in humans (B2 classification or likely to cause cancer in humans). EPA's cancer slope factors (CSFs) for PCBs represent plausible upper bound estimates, which means that EPA is reasonably confident that the actual cancer risks will not exceed the estimated risks-calculated using the CSF. For ingestion, CSFs of 2 (mg/kg-day)-l and 1 (mg/kg-day)-1 were used for the RME and CT (average) exposure, respectively. For dermal and inhalation exposures, a CSF of 2 (mg/kg-day)-l was used with a dermal absorption fraction of 14%, consistent with the IRIS chemical file recommendations. For inhalation, a CSF of 0.4 (mg/kg-day)-1 was used. Table 3 summarizes the cancer toxicity information for the remaining Chemicals of Concern.

Non-Cancer Health Effects: Serious non-cancer health effects have been observed in animals exposed to PCBs. Studies of Rhesus monkeys exposed to PCBs indicate a reduced ability to fight infection and reduced birth weight in offspring exposed to PCBs in utero. Studies of non-cancer health effects, including effects observed in children of mothers who consume PCB-contaminated fish, are being evaluated by EPA as part of the Agency's IRIS process.

The chronic RfD represents an estimate (with uncertainty spanning perhaps an order of magnitude or greater) of a daily exposure level for the human population, including sensitive populations (e.g., children), that is likely to be without an appreciable risk of deleterious effects during a lifetime. Chemical exposures exceeding the RfD do not predict specific disease. For the ingestion pathway, the oral RfD for Aroclor 1254 of 2x10-5 mg/kg-day was used for the RME and CT (average) exposures consistent with the reported Aroclor mixtures (i.e., Aroclor 1248, 1254 and 1260). For reported concentrations of Arochlor 1242, the RfD for Aroclor 1016 was used based on similarities in congener patterns. Table 4 summarizes the RfDs, and target organs for the other chemicals of concern.

Risk Characterization

This final step in the HHRA combines the exposure and toxicity information to provide a quantitative assessment of Site cancer risks and non-cancer health hazards. Exposures are evaluated based on the potential risk for developing cancer and the potential for non-cancer health hazards.

Cancer Risks

Cancer risk is expressed as a probability. For example, a 10-4 cancer risk means a “one in 10,000 excess cancer risk,” or an increased risk of an individual developing cancer of one in 10,000 as a result of exposure to site contaminants under the conditions used in the Exposure Assessment. Under the federal Superfund program, EPA’s goal for protection is an excess cancer risk of 10-6 (1 in 1,000,000) or less for the Reasonable Maximum Exposure (RME) individual, and acceptable exposures are an individual lifetime excess cancer risk at or below the range of 10-4 to 10-6 (corresponding to a one in 10,000 to a one in 1,000,000 excess cancer risk). NJDEP’s acceptable risk level for carcinogens is 1x10-6.

Excess lifetime cancer risk is calculated from the following equation:

Risk = CDI x CSF

where:

Risk = a unit less probability (e. g., 1 x 10-3 of an individual developing cancer)
CDI = chronic daily intake averaged over 70 years (mg/kg-day)
CSF = Cancer Slope Factor, expressed as (mg/kg-day)-l

At the SCP Site, cancer risks to the RME individual are above acceptable levels, as shown below in the table titled Point Estimate Cancer Risk Summary (see also Table 5). In addition, cancer risks to the average individual are above EPA’s goal for protection of 1 in 1,000,000 and EPA’s highest generally accepted risk level of 1 in 10,000 (see also Table 5).

Point Estimate Cancer Risk Summary		
Pathway	**CT (Average) Cancer Risk**	**RME Cancer Risk**
Ingestion, Inhalation, and Dermal Contact with Surface Soil and Groundwater. Site Worker.	4.8 x 10E-02 (4.8 in 100)	2.6 x 10E-01 (2.6 in 10)
Ingestion and Dermal Contact with Subsurface Soil. Construction Worker	Not calculated due to lack of exposure information.	2.8 x 10E-03 (2.8 in 1,000)
Ingestion and Dermal Contact with Deep Subsurface Soil. Construction Worker	Not calculated due to lack of exposure information.	7.9 x 10E-06 (7.9 in 1,000,000)
Ingestion, Inhalation, and Dermal Exposure to Surface Soil. Adolescent Trespasser.	4.8 x10E-04 (4.8 in 100,000)	2.5 x 10E-03 (2.5 in 1,000)

Non-Cancer Health Hazards

The potential for non- cancer health effects is evaluated by comparing an exposure level over a specified time period (e.g., 7 years) with an RfD derived for a similar exposure period. An RfD represents a level that an individual may be exposed to that is not expected to cause any deleterious effect. The ratio of exposure to toxicity is called a Hazard Quotient (HQ). An HQ less than 1 indicates that a receptor’s dose of a single contaminant is less than the RfD, and that non-carcinogenic health effects from that chemical are unlikely. A Hazard Index (HI) represents the sum of the individual exposure levels for different chemicals with the same target organ or mechanism of toxicity, and different media (e.g., soil, groundwater, air) compared to their corresponding RfDs. The key concept of a non-cancer HI is that a threshold level (measured as an HI of 1) exists below which non-cancer health effects are not expected to occur. Under the federal Superfund program, EPA’s goal for protection for non- cancer health hazards is an HI less than 1 for the RME individual.

The HQ is calculated as follows:

Non-cancer HQ = CDI/RfD

where: CDI = Chronic daily intake (mg/kg-day)
RfD = Reference dose (mg/kg-day)

CDI and RfD are expressed in the same units and represent the same exposure period (i.e., chronic).

At the Site, non-cancer health hazards to the RME individual associated with ingestion of PCBs in soil and groundwater are above acceptable levels, as shown below (see also Table 6). In addition, non-cancer health hazards to the average (CT) individual are above generally acceptable levels of concern (see also Table 6).

Point Estimate Non-Cancer Risk Summary		
Pathway	**CT (Avg.) Non-Cancer HI**	**RME Non-Cancer HI**
Ingestion, Inhalation, and Dermal Contact with Surface Soil and Groundwater. Site Worker.	3,102	5,042
Ingestion and Dermal Contact with Subsurface Soil. Construction Worker	Not calculated due to lack of exposure information.	31
Air (Modeled Concentration) Off-Site Worker.	<1	<1
Ingestion, Inhalation, and Dermal Exposure to Surface Soil. Adolescent Trespasser.	38	234

Uncertainty

The process of evaluating human health cancer risks and non-cancer health hazards involves multiple steps. Inherent in each step of the process are uncertainties that ultimately affect the final cancer risk and non-cancer health hazard estimates. Uncertainties may exist in numerous areas. Important sources of uncertainty in the revised HHRA are as follows:

- PCB Toxicity. Toxicity values are inherently uncertain. EPA describes the uncertainty in the cancer toxicity values as extending in both directions (i.e., contributing to possible underestimate or overestimate of cancer potency factors). However, the Cancer Slope Factors (CSFs) were developed to represent plausible upper bound estimates, which means that EPA is reasonably confident that the actual cancer risk will not exceed the estimated risk calculated using the CSF. The CSFs used in the HHRA were peer- reviewed and supported by a panel of independent scientists and are the most current values recommended by EPA in IRIS.

Non-cancer Toxicity Values for PCBs are also uncertain. The current oral RfDs for Aroclor 1016 and 1254, which were used in the revised HHRA, have uncertainty factors of 100 and 300, respectively. Since these RfDs were developed, a number of recent national and international studies have reported possible associations between developmental and neurotoxic effects in children from prenatal or postnatal exposures to PCBs. In light of these new studies, the current RfDs are currently being evaluated as part of the IRIS process and it would be inappropriate to prejudge the results of the IRIS evaluation at this time.

- Chemical Toxicity Information. Chemical toxicity values (i.e., CSFs, RfDs, and RfCs) were not available for a number of chemicals. Therefore, these chemicals were not quantitatively evaluated in the revised HHRA. This may result in a potential underestimate of cancer risks and non- cancer health hazards for the Site.

- Chemical Data. As described above, the data from the original HHRA were used in the revised HHRA to calculate cancer risks and non-cancer health hazards. Over time, there is a potential that chemical concentrations may be lower or that chemicals may have degraded to other chemicals. This may potentially overestimate or underestimate the cancer risks and non-cancer health hazards depending on the degree of change in concentration and the end-products of degradation.

  In addition, the analysis primarily used the maximum concentration found in soil and groundwater consistent with the approach used in the original HHRA and with the Hot Spot analysis conducted. If the 95% Upper Confidence Level (UCL) was used in the calculation of cancer risks and non-cancer health hazards, the resulting assessment may have been lower but still unacceptable.

- Other Exposures. As mentioned earlier, risks associated with off-site ingestion of groundwater and impacts from the Peach Island Creek were not evaluated in the revised HHRA but will be considered in OU-3. Therefore, the cancer risks and non-cancer health hazards may be underestimated.

REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives are specific goals to protect human health and the environment. These objectives are based on available information and standards such as applicable or relevant and appropriate requirements (ARARs). The Remedial Action Objectives for the OU2 Fill Area are to:

- Mitigate the direct contact risk and leaching of contaminants from soil, fill material and sludge into the groundwater;

- Reduce the toxicity and mobility of the Hot Spot contaminants via treatment;

- Provide hydraulic control of the shallow aquifer by maintaining an inward groundwater gradient; and

- Perform remediation in such a manner that may allow site re-use for certain limited commercial purposes.

DESCRIPTION OF REMEDIAL ALTERNATIVES

The remedial alternatives, which were developed during the Feasibility Study, are summarized below. Several of the remedial alternatives include common components. Alternatives SC-3, SC-4 and SC-5 include improving the existing interim containment remedy as a key remedial component. Also, treatment of the Hot Spot is a component of both SC-4 and SC-5.

Because implementation of all of the alternatives, except SC-2, would result in contaminants remaining on the Site at levels above those that would allow for unrestricted use, five-year reviews will be required in perpetuity. In addition, since soils will be left on-site above unrestricted use levels, and above “to be considered” criteria such as the New Jersey soil clean-up levels, all of the alternatives (with the exception of SC-2) would require some form of institutional controls (e.g., deed notice) in addition to the engineering controls described below. Note that the time frames indicated for construction do not include the time for remedial design or the time to procure contracts.

Remedial alternatives for OU2 are presented below.

<u>Alternative SC-1: No Action</u>

Estimated Capital Cost	$0
Estimated Annual O&M Cost	$0
Estimated Present Worth Cost	$0
Estimated Construction Timeframe	None

Regulations governing the Superfund program require that the “no action” alternative be evaluated generally to establish a baseline for comparison. Under this alternative, EPA would take no action at the Site to prevent exposure to the soil contamination. The contaminated soil would be left in place without treatment. As the interim remedy was not designed to be permanent, EPA expects that it would eventually fail. This could allow on-site exposure as well as an increased possibility that additional contamination would migrate from the Fill Area.

<u>Alternative SC-2: Excavation/Ex-situ Treatment/Disposal</u>

Estimated Capital Cost	$91 million
Estimated Annual O&M Cost	$100,000
Estimated Present Worth Cost	$94 million
Estimated Construction Timeframe	2 years

Under this alternative, all the contaminated soil, sludge and debris in the entire Fill Area would be removed and sent off-site for treatment or disposal. The mix of large debris and soil found in the Fill Area would be separated by size and composition and stockpiled on-site. Extensive dewatering activities would be conducted prior to and during any excavation activities. Dewatering would include extraction, pretreatment of water on site (to remove sediments) and off site shipping of water to a licensed hazardous wastewater treatment facility. The filtered solids would be characterized and disposed of appropriately. A sheet pile wall would be installed around the entire Fill Area to allow the excavation and removal of the majority of Fill Area debris and soil while protecting the existing slurry wall. During excavation, high levels of VOC and dust emissions would be produced. Dust, VOCs and odor would need to be controlled to protect nearby off- site receptors and the general public. Extensive control of VOC vapor and dust, possibly through use of an enclosed structure over the entire site, as well as air monitoring would need to be provided over the entire site during remedial activities, as would control of run-off due to precipitation. The Fill Area would be backfilled with clean fill and regraded. As all contaminated soils, sludges and debris would be excavated and contaminated groundwater pumped out during the dewatering process, neither the existing nor additional containment measures would be necessary, however long-term monitoring of the shallow groundwater would continue.

<u>Alternative SC-3: Excavation of Hot Spot Area, Capping, and Shallow Groundwater Collection</u>

Estimated Capital Cost	$13.9 million
Estimated Annual O&M Cost	$180,000
Estimated Present Worth Cost	$16.7 million
Estimated Construction Timeframe	13 Months

For this alternative, as well as Alternatives SC-4 and SC-5 (the selected remedy), the key elements of the existing interim remedy would be improved and made permanent. The Hot Spot area sludge would be excavated and sent off-site for treatment (incineration) and disposal. Dewatering activities would be conducted prior to and during the excavation activity with off-site treatment and disposal of the groundwater. A braced excavation using sheet piles supported by at least two levels of internal bracing would be required to provide a stable excavation and to protect the integrity of the existing slurry wall, which is within 10 feet of the sludge area at some locations. In order to provide a stable excavation and limit emissions, the sludge area would need to be excavated in multiple “cells” rather than a single large excavation. Each cell would be backfilled with imported clean fill before excavating the adjoining cell. During excavation, VOC and dust emissions, and odor would need to be controlled to protect nearby off-site receptors and the general public. To achieve the necessary control, excavation activities would likely need to be completed within a fully enclosed structure so that all VOC and dust emissions could be collected and treated using appropriate technologies such as catalytic oxidation or phase activated carbon adsorption prior to discharging to the atmosphere. The cap would consist of a 2-foot thick “double containment” cover system, which would be constructed over the entire area currently circumscribed by the existing slurry wall, and over the area between the slurry wall and the sheet piling along Peach Island Creek (see Figure 3). The cover system would provide flexibility for the potential end-use of the Site for commercial purposes.

In order to maintain hydraulic control within the existing slurry wall, the existing, interim groundwater recovery system, which consists of above ground piping and seven wells screened in the Fill Area, which discharges to a 10,000 gallon on-site holding tank, would be improved. The improvements would include the installation of new extraction wells along the perimeter of the Site, construction of underground clean utility corridors for the wells, and piping and electrical system to allow more flexibility for future uses of the Site. A geotextile would be placed within the utility corridor to separate Fill Area soils from clean soils within the utility corridors. The extracted groundwater would either be collected in the existing 10,000 gallon above-ground tank for disposal via tanker truck at a commercial facility, or pumped, via sewer connection, to the Bergen County Publicly Owned Treatment Works (POTW) for treatment.

Currently, a sheet pile wall along Peach Island Creek protects the slurry wall along the riparian side of the Fill Area. Improvements would be made to the sheet pile wall which could include the installation of slope stabilization material such as rip-rap. Soil samples will be collected between the slurry wall and the sheet pile wall, especially the area adjacent to the sludge area, during the remedial design or remedial action phase of OU2. The existing slurry wall would remain in place.

The slurry wall includes a double containment system consisting of a soil-bentonite slurry barrier and a geomembrane barrier. The slurry wall is keyed into the natural clay layer underlying the Fill Area. For this alternative, as well as Alternatives SC-4 and SC-5, the effectiveness of the slurry wall will be evaluated during the design phase of the clean-up. In addition, after implementation of the design, long term monitoring will continue through the use of shallow groundwater wells outside the slurry wall.

<u>Alternative SC-4 In-Situ Thermal Desorption, Capping, and Shallow Groundwater Collection</u>

Estimated Capital Cost	$4.7 million
Estimated Annual O&M Cost	$180,000
Estimated Present Worth Cost	$7.5 million
Estimated Construction Timeframe	1 year

In- situ thermal desorption treatment of the Hot Spot Area could be achieved via installation of thermal wells, consisting of a perforated outer steel casing and interior heating element, in a closely-spaced pattern throughout the area. A heat resistant silica blanket would be placed over the area forming a seal to minimize losses of VOCs and steam, as well as to reduce intrusion of atmospheric air. The wells and an approximately 6-inch wide concentric halo would be heated to 1,400NF. Heat propagating throughout the area would first vaporize moisture, and then increase sludge temperatures to around 450NF (sufficiently high to cause PCBs to desorb from the soil). A modest vacuum (3 to 5 inches of water) would be applied to each well in the system to remove vapors. Extracted vapors would be treated by an indirect fired thermal oxidizer at ground surface followed by a heat exchanger and a vapor phase activated carbon (VPAC) system.

A description of the capping and groundwater collection that would be performed for this alternative can be found in the description of Alternative SC-3.

<u>Alternative SC-5: Air Stripping, Capping, Solidification/Stabilization and Shallow Groundwater Collection.</u>

Estimated Capital Cost	$4.7 million
Estimated Annual O&M Cost	$180,000
Estimated Present Worth Cost	$7.5 million
Estimated Construction Timeframe	One Year

For this alternative, in-situ (i.e., in place) treatment followed by solidification/ stabilization of the Hot Spot Area would be performed.

The Hot Spot Area would first be treated, in-situ, via air stripping, which in this case would be effected by aerating the Hot Spot area with augers or paddles. During operation of the selected air stripping method, small shrouds will be placed directly over the augers or paddles and negative pressure would be maintained within the shroud to capture the VOCs released during mixing. VOCs released from the Hot Spot Material would be treated using vapor phase activated carbon, a catalytic oxidizer or other appropriate technologies. Cement and lime, which the treatability studies showed to be effective in stabilizing the PCBs and SVOCs, would be used as the solidification and stabilization agent. Addition of the cement and lime would increase the volume of the Hot Spot area by about 10%. Treatment is expected to extend at least two feet below the natural ground surface, which would be approximately 10-18 feet below existing ground surface.

This alternative would also include improving and making permanent the key elements of the existing interim remedy. A description of the improvements such as capping and groundwater collection that would be performed for this alternative can be found in the description of Alternative SC-3.

<u>COMPARATIVE ANALYSIS OF ALTERNATIVES</u>

In selecting a remedy, EPA considers the factors set out in Section 121 of CERCLA, 42 U.S.C. §9261, by conducting a detailed analysis of the viable remedial alternatives pursuant to the NCP, 40 CFR § 300.430(e)(9) and Office of Solid Waste and Emergency Response (OSWER) Directive 9355.3-01. The detailed analysis consists of an assessment of the alternatives against each of nine evaluation criteria and comparative analysis focusing upon the relative performance of each alternative against those criteria.

Threshold Criteria - *The first two criteria are known as "threshold criteria" because they are the minimum requirements that each response measure must meet in order to be eligible for selection as a remedy.*

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1. Overall Protection of Human Health and the Environment

This criteria addresses whether each alternative provides adequate protection of human health and the environment and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled, through treatment, engineering controls, and/or institutional controls.

<u>Alternative SC-1</u>, the no action alternative, is not protective of human health and the environment because it does not eliminate, reduce or control risks posed by the site through treatment of soil contaminants, engineering controls, and/or institutional controls.

<u>Alternative SC-2</u> would remove for disposal or treatment the contaminated material in the entire Fill Area, thereby providing the most protection to property owners/occupants from

future exposure to contaminated soils.

Alternative SC-3 would remove the most contaminated portion of the Fill Area (i.e., the Hot-Spot) and include a cap, other containment measures, as well as institutional controls and, therefore, provides adequate protection to property owners/occupants from future exposure to contaminated soils.

Alternatives SC-4 and SC-5 would treat, through thermal desorbtion and air stripping/ stabilization, respectively, the most contaminated portion of the Fill Area (i.e., the Hot-Spot) and, like Alternative SC-3, include a cap, other containment measures, and institutional controls. Therefore, these alternatives would provide adequate protection to property owners/occupants from future exposure to contaminated soils. Also, Alternatives SC-3, SC-4 and SC-5 would all prevent the spread of contaminants outside the Site through the use of the existing slurry wall, and an improved groundwater collection system.

2. Compliance with applicable or relevant and appropriate requirements (ARARs)
Section 121(d) of CERCLA and NCP §300.430(f)(1)(ii)(B) require that remedial actions at CERCLA sites at least attain legally applicable or relevant and appropriate Federal and State requirements, standards, criteria and limitations which are collectively referred to as "ARARs," unless such ARARs are waived under CERCLA Section 121(d)(4).

Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that specifically address a hazardous substance, a pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only the State standards that are identified by a state in a timely manner and that are more stringent than Federal requirements may be applicable. Relevant and appropriate requirements are those clean-up standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. Only those State standards that are identified in a timely manner and are more stringent than Federal requirements may be relevant and appropriate.

Compliance with ARARs addresses whether a remedy will meet all of the applicable or relevant and appropriate requirements of Federal and State environmental statutes or provides a basis for invoking a waiver.

Actions taken at any Superfund site must meet all ARARs of federal and state law, or provide grounds for invoking a waiver of these requirements. These include chemical-specific, location-specific and action-specific ARARs.

Soil

There are no chemical-specific ARARs for the contaminated soils. Any soil remediation goals would therefore be risk-based.

Alternative SC-1. Because ARARs apply to actions taken, they are not applicable to the no action alternative.

Alternative SC-2. There are no chemical-specific ARARs for the contaminated soils. If Alternative SC- 2 were selected, risk- based cleanup goals for the Fill Area would be developed and the New Jersey Soil Cleanup Criteria (NJSCC) would be taken into consideration. There are three types of NJSCC: Residential Direct Contact (RDCSCC); Non-Residential Direct Contact (NRDCSCC); and Impact to Groundwater (IGWSCC). Since the Site is located in a non-residential/commercial area, the more stringent of the NRDCSCC or the IGWSCC would be considered in the development of risk-based soil cleanup goals.

Alternatives SC-3, SC-4 and SC-5 would, through containment, monitoring and institutional controls, mitigate the potential risks from the Site and therefore comply with NJSCC.

Alternatives SC-2, SC-3, SC-4 and SC-5 would substantively comply with the New Jersey Technical Requirements for Site Remediation, N.J.A.C. 7:26E et. seq., the New Jersey Brownfield and Contaminated Site Remediation Act, N.J.A.C. 58:10B and any relevant local requirements including the Hackensack Meadowlands Development Commission regulations.

The Resource Conservation and Recovery Act (RCRA) is a federal law that mandates procedures for treating, transporting, storing and disposing of hazardous substances. All portions of RCRA that were applicable or relevant and appropriate to the proposed remedy for the Site would be met by Alternatives SC-2, SC-3, SC-4 and SC-5.

Groundwater

Alternatives SC-3, SC-4 and SC-5 require that groundwater within the Fill Area be pumped and sent off- site, which in combination with the slurry wall and natural clay layer would prevent the spread of contaminants to the surrounding areas or to surface water thereby preventing any direct exposure to contaminated water. In addition, since the Groundwater Quality Standards will not be met within the Fill Area, a Classification Exception Area (CEA) would need to be established for all of the alternatives, except possibly for SC-2.

Primary Balancing Criteria - *The next five criteria, criteria 3 through 7, are known as "primary balancing criteria. "These criteria are factors with which tradeoffs between response measures are assessed so that the best option will be chosen, given the site-specific data and conditions.*

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3. Long-term Effectiveness and Permanence

Long-term effectiveness and permanence refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup levels have been met. This criterion includes the consideration of residual risk that will remain on site following remediation and the adequacy and reliability of controls.

Alternative SC-1 would provide no long-term effectiveness and permanence in the prevention of direct contact to or spread of Fill Area contamination.

Alternative SC-2 would provide the greatest long-term effectiveness without requiring long-term controls as soils above risk-based cleanup levels would be removed from the Site.

Alternatives SC 3, SC-4 and SC-5 are all effective in the long-term, although to a lesser degree than SC-2, as they would reduce potential risks due to ingestion and dermal contact pathways and minimize any potential of contamination impacting groundwater outside the Fill Area. However the cap, slurry wall, groundwater pumping system and monitoring wells would require regular inspection and maintenance to ensure the integrity of the remedy over the long-term.

4. Reduction of Toxicity, Mobility or Volume of Contaminants Through Treatment

Reduction of toxicity, mobility, or volume through treatment refers to the anticipated performance of the treatment technologies that may be included as part of a remedy.

Alternative SC-1 would not reduce the toxicity, mobility or volume of contaminated soil.

Alternative SC-2 would reduce toxicity, mobility and volume of contaminants on-site though removal and treatment or disposal of the contaminants off-site.

Alternative SC-3 would reduce the toxicity, mobility and volume of the contaminants in the Fill Area through direct removal and treatment of the entire Hot Spot Area, and would reduce mobility over the whole Fill Area through installation of a permanent cap.

Alternative SC-4 and SC-5 would reduce the concentration, as well as the toxicity and mobility, of a large percentage of the contaminants in the Fill Area through treatment of the highly-contaminated Hot Spot Area. SC-5 would also stabilize any remaining contamination in the Hot Spot Area, but would increase the volume of the Hot Spot Area by approximately 10 percent through the addition of stabilizing materials. Like Alternative SC-3, Alternative SC-4 and SC-5 would also reduce mobility over the whole Fill Area through installation of a permanent cap.

5. Short-term Effectiveness

Short-term effectiveness addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers, the community and the environment during construction and operation of the remedy until cleanup levels are achieved.

Alternative SC-1, the No Action alternative, poses no short-term risks and can be implemented immediately.

Alternative SC-2 has the greatest short-term risk. It would require the most excavation, and would also require extensive stockpiling and separation of the on-site soil and debris. Even with engineering methods such as the construction of a negative pressure enclosed structure over the entire site, controlling 99% of VOC releases and dust emissions (as required) would be extremely difficult during excavation. Implementation of Alternative SC-2 would require additional truck traffic in the industrial area around the Site, which would have to be coordinated with local officials so as to lessen the impacts to normal area traffic. And as in Alternative SC-3 below, due to the nature of the contamination, few facilities can handle a significant portion of the site waste, therefore the progress of the remediation could be impeded. The estimated timeframe for implementation is twice as long (i.e., two years) as Alternatives SC-3, SC-4 and SC-5.

Alternative SC-3 may require construction of a large tent over a portion of the Site to ensure that the high concentration of VOCs that exist on-site are not released into the air during the excavation of the Hot Spot area. Also, significant effort would be needed to prevent escape of VOCs during the excavation and there would be added risk associated with transporting the sludge to the nearest available treatment and disposal facilities. Additionally, the only facilities that can handle mixed waste of the sort found in the Hot Spot area, have indicated that they would have to impose daily limits on the amount of sludge they could accept in order to prevent emissions violations. Therefore, limitations on the rate of acceptance of the sludge at a disposal area could significantly impede the progress of this remedial action. Implementation of Alternative SC-3 would require additional truck traffic in the industrial area around the Site, which would have to be coordinated with local officials so as to lessen the impacts to normal area traffic.

Alternative SC-4 would require the installation and operation of high temperature thermal elements and would allow for the potential of VOC and Hydrogen Chloride (HCl) releases. There are a number of uncertainties related to the technical practicability of this alternative. Thermally treating high levels of total organic carbon in the Hot Spot area (from oil and grease) would likely cause ash and coke build-up around the wells. This build-up could make the wells completely inoperable or inefficient in the extraction of vapors. The treatment temperatures would be high enough to allow vaporization of metals which may damage the efficiency of the thermal oxidizer. The effectiveness of this action is also uncertain due to the very high water content in this area.

Alternative SC-5 would require control of VOC releases during the air stripping remedial action through the use of small shrouds. This would require close monitoring to ensure short-term effectiveness and safety. Alternatives SC-3, SC-4 and SC-5 would use the capping/slurry-wall and groundwater collection methods to contain the wastes in the Fill

Area. These methods have been shown to be effective during eight years of operation of the interim remedy.

6. Implementability

Implementability addresses the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered.

Alternative SC-1 requires no implementation.

Alternative SC-2 would require surmounting many technical and potential human exposure problems. Approximately 99% of the VOC and dust emissions would have to be controlled in order to protect against a potential “worst-case” off-site human exposure scenario. VOC and dust control would require that excavation and material handling activities for the entire Site be conducted within an enclosed structure. Emissions from the enclosure would require treatment prior to being discharged to the atmosphere. In addition, the large and varied amount of soil and debris found in the Fill Area, including wood, plastic, metal, cement, saturated and unsaturated soils etc., would require extensive manual labor to separate and would require creation of a large number of on-site stock piles in a relatively small area.

The increased traffic, possible street closures, and the need to stockpile debris near the site would require coordination with local and state agencies. State and local agency coordination would also be required for relevant permits.

Alternatives SC-3, SC-4 and SC-5 would improve and make permanent the existing interim remedy as described in SC-3 and referenced in SC-4 and SC-5. A new slurry wall would not need to be constructed, however, a new cap, stream bank stabilization along Peach Island Creek, piping for groundwater collection, and additional monitoring wells would be constructed or installed. The methods for this work are well known and equipment is readily available.

Alternative SC-3 would entail significant challenges relating to the removal of the Hot Spot. Construction risks, due to the instability of the Hot Spot, and the risk of contaminant migration during construction activities are significant. Also, significant effort would be needed to prevent escape of VOCs during the excavation and there would be added risk associated with transporting the sludge to the nearest available treatment and disposal facilities. Additionally, limitations on the rate of acceptance of the sludge at a disposal area, as described in the Short Term Effectiveness section of this ROD, would significantly impede the progress of this remedial action.

Treatment of Hot Spot Materials by Thermal Desorption under Alternative SC-4 would be problematic due to the high moisture content (between 85% and 100% saturation) of the sludge. This would likely lead to extended treatment times since virtually all moisture must be vaporized before sludge temperatures increase to allow contaminant desorption. Calculations indicate that large quantities of HCl would be generated, giving rise to concerns that HCl would react with metals forming more soluble compounds (salts) that would be more mobile than the metal compounds which currently exist at the Site. In addition, the high concentrations of petroleum- based oils would likely cause repeated fouling of the thermal system, which in turn would reduce the overall efficiency of the wells to extract vapors and control potential releases at the surface.

The Alternative SC-5 treatment processes using air stripping and stabilization/ solidification for Hot Spot materials are relatively well known technologies. This treatment proved effective during treatability studies using sludge from the Hot Spot Area, where concentrations of VOCs were reduced by 90% and mobilization of PCBs and VOCs were reduced by over 95%. Due to the fact that only small areas will be treated at a time, and that bulk excavation will not occur, the potential of VOC releases during aeration and the spread of the contaminants during implementation of this alternative is far less than for either Alternative SC-3 or SC-2. Nevertheless, these risks would need to be addressed during the remedial action.

7. Cost
Includes estimated capital and O&M costs, and net present worth value of capital and O&M costs.

Alternative SC-1 has a cost of $0

The estimated present worth cost of Alternative SC-2 ($94 million) is significantly more than Alternative SC-3 ($16.7 million). Alternative SC-3 is approximately twice the cost of either Alternative SC-4 or SC-5 ($7.5 million). The costs for the latter two alternatives are comparable, as are the implementation time frames.

Modifying Criteria - *The final two evaluation criteria, criteria 8 and 9, are called "modifying criteria" because new information or comments from the state or the community on the Proposed Plan may modify the preferred remedy and cause another response measure to be considered.*

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8. State/Support Agency Acceptance
Indicates whether based on its review of the RI/FS reports and the Proposed Plan, the state supports, opposes, and/or has identified any reservations with the selected response measure.

NJDEP concurs with the selected remedy, Alternative SC-5, however if Alternative SC-5 fails to meet engineering criteria with regards to stabilization, NJDEP recommends and EPA agrees that Alternative SC-3 be used as the alternate remedy.

9. Community Acceptance
Summarizes the public's general response to the proposed alternative and other information described in the Proposed Plan and the RI/FS reports. This assessment includes determining which of the response measures the community supports, opposes, and/or has reservations about.

During the public comment period, the community expressed its support for Alternatives SC-3 and SC-5. The community did not consider Alternative SC-1 to be adequately protective, and felt that Alternatives SC-2 and SC-4 were not feasible. The attached Responsiveness Summary summarizes the community comments on the Proposed Plan.

PRINCIPAL THREAT WASTE

The action chosen in the ROD addresses the Hot Spot area material which is the high-level or principal threat waste associated with OU2 at the Site.

SELECTED REMEDY

Based upon consideration of the results of the site investigation, the requirements of CERCLA, the detailed analysis of the response measures, and public comments, EPA has determined that Alternative SC-5 is the appropriate remedy for addressing the Fill Area. The selected alternative, Alternative SC-5, for cleanup of the OU2 soils consists of the following components.

- Air stripping of the Hot Spot area until levels of VOCs are reduced to whichever is more stringent: 90% lower than current levels, the average VOC levels in the Fill Area outside the Hot Spot (i.e., 1,000 ppm) or to a level where interference with stabilization will not occur. VOCs released during treatment will be collected and treated on site, or adsorbed to assure no negative impacts to the surrounding community.

- Soil stabilization of the Hot Spot using cement and lime, so that the Hot Spot is solidified to meet an unconfined strength of at least 15 pounds per square inch and at least a 90% reduction in leachability based on Synthetic Precipitation Leaching Procedure (SPLP) analysis. VOCs released during treatment will be treated on site, or adsorbed to assure no negative impacts to the surrounding community.

- Installation of a landfill cap over the entire Fill Area. The cap will consist of a 2- foot thick “double containment” cover system, which will be constructed over the entire area currently circumscribed by the existing slurry wall.

- Improvement of the existing, interim groundwater recovery system (as described in Alternative SC-3), which consists of above ground piping, as well as wells screened in the Fill Area. The improvements will include the installation of new extraction wells along the perimeter of the Site, construction of underground clean utility corridors for the wells, and piping and electrical system to allow more flexibility for future uses of the Site. The extracted groundwater will either be collected in the existing above-ground tank for disposal, or pumped, via sewer connection, to the Bergen County Publicly Owned Treatment Works (POTW) for treatment.

- The existing sheet pile wall along Peach Island Creek, which protects the slurry wall along the riparian side of the Fill Area, will be improved and upgraded.

While EPA believes the Hot Spot treatment portion of the Selected Remedy will be effective, as in any remedial action, if appropriate performance standards for treatment, solidification and containment are not met, then removal of the Hot Spot, as described in Alternative SC-3 will be performed.

The Selected Alternative was chosen over the other alternatives since it is readily implementable, and it is expected to achieve reduction in the VOC concentration while also stabilizing and containing the inorganic and PCB contamination in the most highly-contaminated area (i.e., the Hot Spot) of the Fill Area. In addition, containment, which is the key element of the Selected Alternative, improves on the interim remedy to make it viable on a long-term basis to reduce the potential of risk from contaminants that will remain in the Fill Area. The containment measures implemented as part of the interim remedy (OU1) have proved effective during the remedy’s entire eight years of operation. The Selected Alternative greatly reduces the potential of risk to human health and the environment through treatment of the most highly-contaminated area, while improving on the existing effective remedy for soils and groundwater currently in place.

Based on the information available at this time, EPA and NJDEP believe the Selected Alternative is protective of human health and the environment, is cost effective, and will use permanent solutions and alternative treatment technologies to the maximum extent practicable. Because it will treat the portion of the source material constituting principal threats, the Selected Alternative meets the statutory preference for the selection of a remedy that involves treatment as a principal element.

STATUTORY DETERMINATIONS

As previously noted, Section 121(b)(1) of CERCLA mandates that a remedial action must be protective of human health and the environment, be cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, or contaminants at the site. Section 121(d) of CERCLA further specifies that a remedial action must attain a degree of cleanup that satisfies ARARs under federal and state laws, unless a waiver can be justified pursuant to Section 121(d)(4) of CERCLA. As discussed below, EPA has determined that the selected remedy meets the requirements of Section 121 of CERCLA.

Protection of Human Health and the Environment

The Selected Remedy, Alternative SC-5, will adequately protect human health and the environment through in-situ treatment, stabilization, off-site treatment of collected contaminated groundwater and containment measures, including a landfill cap as well as institutional controls. The Selected Remedy will prevent all significant direct-contact cancer risks and non- cancer hazards to human health and the environment associated with the Fill Area. In addition, this action will reduce the potential for the Fill Area to act as a source of contamination to the underlying groundwater. This action will result in the continued reduction of exposure levels to acceptable risk levels within EPA's generally acceptable risk range of 10-4 to 10-6 for carcinogens and an HI below 1 for non-carcinogens. Implementation of the Selected Remedy will not pose unacceptable short-term cancer risks, non-cancer health hazards or adverse cross-media impacts.

Compliance with ARARs

At the completion of the response action, the Selected Remedy will have complied with all applicable ARARs, including, but not limited to:

Action-Specific ARARS:

- National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61).
- NJ Administrative Code (NJAC) 7:26E et seq, New Jersey Technical Requirements for Site Remediation
  Note: The substantive requirements of the Technical Requirements may qualify as ARARs where they are more stringent than federal requirements and where they do not conflict with the requirements under CERCLA. This distinction is relevant, for example, where the Technical Requirements require deliverables inconsistent with the NCP or where they require permits that conflict with provisions of CERCLA or the NCP.
- National Ambient Air Quality Standards (40 CFR Part 50).
- RCRA - Land Disposal Restrictions (40 CFR Part 268)
- RCRA - Generator Requirements for Manifesting Waste for Off-site Disposal (40 CFR Part 263).
- RCRA - Transporter Requirements for Off-Site Disposal (40 CFR Part 270).
- RCRA - Standards for Owners/Operators of Permitted Hazardous Waste Facilities (40 CFR Part 264)
- DOT - Rules for Hazardous Materials Transport (49 CFR Parts 107, 171, 173).

Chemical-Specific ARARs:

- None applicable.

Location-Specific ARARs:

- None applicable.

Cost-Effectiveness

The Selected Remedy is cost effective and represents a reasonable value for the money to be spent. Overall effectiveness was evaluated by assessing three of the five balancing criteria in combination (long-term effectiveness and permanence; reduction in toxicity, mobility and volume through treatment; and short-term effectiveness). Overall effectiveness was then compared to costs to determine cost-effectiveness. The relationship of the overall effectiveness of this remedial alternative was determined to be proportional to its costs and hence this alternative represents a reasonable value for the money to be spent.

The estimated present worth cost of the Selected Remedy is $7,500,000, which is the same as the estimated present worth cost of Alternative SC-4. Alternative SC-4 and the Selected Remedy are the least expensive of the remedial Alternatives considered for this Site.

Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable.

EPA has determined that the Selected Remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at the Site. Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA has determined that the Selected Remedy provides the best balance of trade-offs in terms of the five balancing criteria, while also considering the statutory preference for treatment as a principal element and considering State and community acceptance.

The Selected Remedy satisfies the criteria for long-term effectiveness and permanence by preventing the risks due to ingestion and thermal exposure pathways by installation of a permanent cap, and also treatment via air stripping and stabilization of the most contaminated source area. The Selected Remedy presents less short-term risks than any other alternative as the treatment technique used would be the least likely to allow uncontrolled release of volatiles to the surrounding community.

Preference for Treatment as a Principal Element

By utilizing treatment on the most highly- contaminated areas within the Fill Area, the Selected Remedy satisfies the statutory preference for remedies that employ treatment as a principal element.

Five-Year Review Requirements

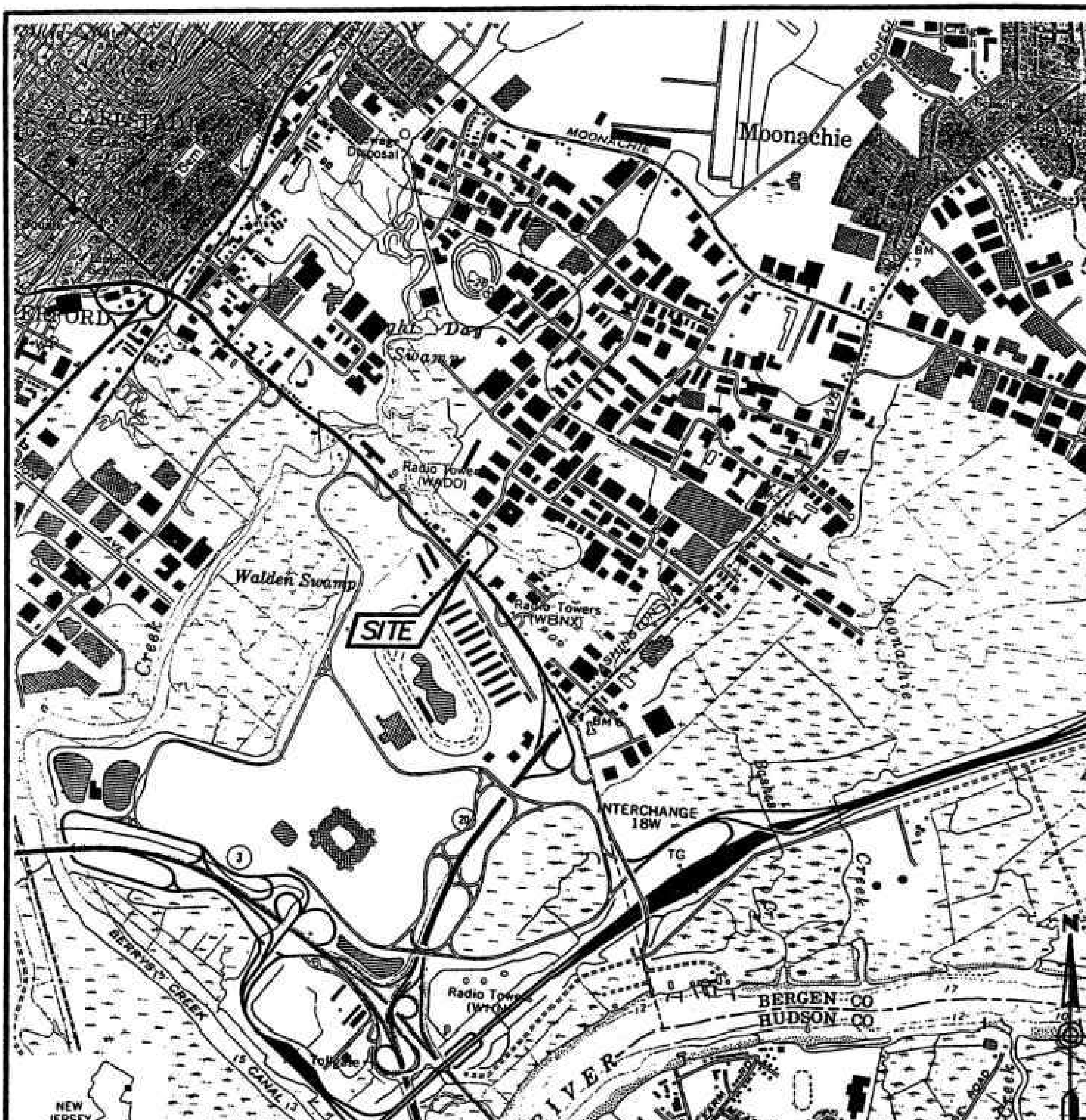
Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on the Site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of remedial action to ensure that the remedy is, or will be, protective of human health and the environment.

DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for the SCP Site was released for public comment on August 15, 2001 and the public comment period ran from that date through October 25, 2001.

All written and verbal comments submitted during the public comment period were reviewed by EPA. Upon review of these comments, EPA has determined that no significant changes to the remedy, as it was originally identified in the Proposed Plan, were necessary.

APPENDIX I
FIGURES



REFERENCE

1.) USGS 7.5 MINUTE WEEHAWKEN QUADRANGLE, NEW JERSEY - NEW YORK, DATE 1967, PHOTOREVISED 1981.

2000 0 2000
scale feet

SITE LOCATION MAP

APPENDIX II
FIGURES

Table 1				
Exposure Point	**Chemicals of Concern**	**Max.**	**Units**	**Frequency of Detection**
Surface Soil (0 to 2 ft).	Tetrachloroethylene	4,290	mg/kg	12/17
	Trichloroethylene	2,060	mg/kg	12/17
	Benzo-a-anthracene	4.54	mg/kg	5/17
	Benzo-a-pyrene	9.39	mg/kg	9/17
	Benzo-b-fluoranthene	17.8	mg/kg	6/17
	Di-benzo-ah-anthracene	2.4	mg/kg	3/17
	Indeno (1,2,3-cd)pyrene	12.2	mg/kg	6/17
	N-nitroso-diphenylamine	2.96	mg/kg	3/17
	1,1-dichloroethylene	0.18	mg/kg	2/17
	Aldrin	67.0	mg/kg	3/17
	Dieldrin	67.0	mg/kg	5/17
	Aresenic	60.0	mg/kg	14/17
	1,2-dichloroethene	10.2	mg/kg	4/17
	Aroclor 1242	1,500.0	mg/kg	11/17
	Aroclor 1248	23.0	mg/kg	4/17
	Aroclor 1260	49.0	mg/kg	2/17
	Aroclor 1264	12.0	mg/kg	3/17
Subsurface Soil (5 to 6 feet)	1,2-dichloroethane	290.0	mg/kg	4/17
	Tetrachloroethylene	1,690.0	mg/kg	12/17
	1,2-Dichloro-ethylene (trans)	512	mg/kg	6/17
	Benzidine	244.0	mg/kg	1/17
	Benzo-a- anthracene	84.2	mg/kg	6/17
	Benzo-a- pyrene	108.0	mg/kg	7/17
	Benzo(b) fluoroanthene	164.0	mg/kg	6/17
	Indeno(1,2,3-cd) pyrene	86.9	mg/kg	4/16
	Aroclor 1242	360.0	mg/kg	12/17
	Aroclor 1248	9.7	mg/kg	2/17
	Aroclor 1254	3.5	mg/kg	3/16

	Aroclor 1260	10.0	mg/kg	2/17
	Arsenic	62.0	mg/kg	15/17
Subsurface Soil (Deep)	Tetrachloro- ethylene	917.0	mg/kg	7/17
	Vinyl chloride	11.78	mg/kg	1/17
	Benzo(a) pyrene	4.74	mg/kg	10/17
	Aroclor 1242	5.4	mg/kg	11/17
	Aroclor 1248	2.6	mg/kg	3/17
	Aroclor 1264	2.2	mg/kg	3/17
	Arsenic	18.0	mg/kg	10/17
Subsurface Soil (Very Deep)	Tetrachloro-ethylene	636.0	mg/kg	14/16
Aqueous	Benzene	7.3	mg/l	10/14
	Chloroform	614	mg/l	4/14
	1,2-dichloro-ethane	473.0	mg/l	4/14
	1,1-dichloro-ethylene	0.032	mg/l	1/14
	1,1,2,2-tetra chloroethane	7.4	mg/l	4/14
	Tetrachloro-ethylene	24.6	mg/l	3/14
	Methylene chloride	200.0	mg/l	10/14
	Trichloroethylene	161.0	Mg/l	8/14
	Bis-2-ethylhexyl phthalate	0.68	Mg/l	6/14
	Vinyl chloride	7.3	Mg/l	8/14
	Isophorone	8.46	Mg/l	6/14
	DDT and compounds	0.0017	mg/l	3/14
	Total PCBs	17.0	Mg/l	6/14
	Arsenic	3.1	Mg/l	10/14

Table 2 Exposure Point Concentrations for Chemicals of Concern.

		Concentration Detected						
Exposure Point	Chemical of Concern	Min.	Max.	Units	Frequency of Detection	Exposure Point Concentration	Exposure Point Concentration Units	Statistical Measure
Surface Soil (0 to 2 ft).	Tetrachloroethylene		4,290	mg/kg	12/17	4,290	mg/kg	Maximum
	Trichloroethylene		2,060	mg/kg	12/17	2,060	mg/kg	Maximum
	Benzo-a-anthracene		4.54	mg/kg	5/17	4.54	mg/kg	Maximum
	Benzo-a-pyrene		9.39	mg/kg	9/17	9.39	mg/kg	Maximum
	Benzo-b-fluoranthene		17.8	mg/kg	6/17	17.8	mg/kg	Maximum
	Di-benzo-ah-anthracene		2.4	mg/kg	3/17	2.4	mg/kg	Maximum
	Indeno(1,2,3-cd)pyrene		12.2	mg/kg	6/17	12.2	mg/kg	Maximum
	N-nitroso-diphenylamine		2.96	mg/kg	3/17	2.96	mg/kg	Maximum
	1,1-dichloroethylene		0.182	mg/kg	2/17	0.182	mg/kg	Maximum
	Aldrin		67.0	mg/kg	3/17	67.0	mg/kg	Maximum
	Dieldrin		67.0	mg/kg	5/17	67.0	mg/kg	Maximum
	Aresenic		60.0	mg/kg	14/17	60.0	mg/kg	Maximum

	1,2-dichloroethene		10.2	mg/kg	4/17	10.2	mg/kg	Maximum
	Aroclor 1242		1,500.0	mg/kg	11/17	1,500.0	mg/kg	Maximum
	Aroclor 1248		23.0	mg/kg	4/17	23.0	mg/kg	Maximum
	Aroclor 1260		49.0	mg/kg	2/17	49.0	mg/kg	Maximum
	Aroclor 1264		12.0	mg/kg	3/17	12.0	mg/kg	Maximum
Subsurface Soil (5 to 6 feet)	1,2-dichloroethane		290.0	mg/kg	4/17	290.0	mg/kg	Maximum
	Tetrachloro ethylene		1,690.0	mg/kg	12/17	1,690.0	mg/kg	Maximum
	1,2-Dichloro-ethylene (trans)		512	mg/kg	6/17	512	mg/kg	Maximum
	Benzidine		244.0	mg/kg	1/17	244.0	mg/kg	Maximum
	Benzo-a-anthracene		84.2	mg/kg	6/17	84.2	mg/kg	Maximum
	Benzo-a- pyrene		108.0	mg/kg	7/17	108.0	mg/kg	Maximum
	Benzo(b) fluoroanthene		164.0	mg/kg	6/17	164.0	mg/kg	Maximum
	Indeno(1,2,3-cd) pyrene		86.9	mg/kg	4/16	86.9	mg/kg	Maximum
	Aroclor 1242		360.0	mg/kg	12/17	360.0	mg/kg	Maximum
	Arclor 1248		9.7	mg/kg	2/17	9.7	mg/kg	Maximum

	Arcolor 1254		3.5	mg/kg	3/16	3.5	mg/kg	Maximum
	Aroclor 1260		10.0	mg/kg	2/17	10.0	mg/kg	Maximum
	Arsenic		62.0	mg/kg	15/17	62.0	mg/kg	Maximum
Subsurface Soil (Deep)	Tetrachloro-ethylene		917.0	mg/kg	7/17	917.0	mg/kg	Maximum
	Vinyl chloride		11.78	mg/kg	1/17	11.78	mg/kg	Maximum
	Benzo(a) pyrene		4.74	mg/kg	10/17	4.74	mg/kg	Maximum
	Aroclor 1242		5.4	mg/kg	11/17	5.4	mg/kg	Maximum
	Aroclor 1248		2.6	mg/kg	3/17	2.6	mg/kg	Maximum
	Aroclor 1264		2.2	mg/kg	3/17	2.2	mg/kg	Maximum
	Arsenic		18.0	mg/kg	10/17	18.0	mg/kg	Maximum
Subsurface Soil (Very Deep)	Tetrachloro-ethylene		636.0	mg/kg	14/16	636.0	mg/kg	Maximum
Groundwater	Benzene		7.3	mg/l	10/14	7.3	mg/l	Maximum
	Chloroform		614	mg/l	4/14	614.0	mg/l	Maximum
	1,2-dichloro-ethane		473.0	mg/l	4/14	473.0	mg/l	Maximum
	1,1-dichloro-ethylene		0.032	mg/l	1/14	0.032	mg/l	Maximum
	1,1,2,2-tetra chloroethane		7.4	mg/l	4/14	7.4	mg/l	Maximum

	Tetrachloro-ethylene		24.6	mg/l	3/14	24.6	mg/l	Maximum
	Methylene chloride		200.0	mg/l	10/14	200.0	mg/l	Maximum
	Trichloroethylene		161.0	Mg/l	8/14	161.0	Mg/l	Maximum
	Bis-2-ethylhexyl phthalate		0.68	Mg/l	6/14	0.68	Mg/l	Maximum
	Vinyl chloride		7.3	Mg/l	8/14	7.3	Mg/l	Maximum
	Isophorone		8.46	Mg/l	6/14	8.46	Mg/l	Maximum
	DDT and compounds		0.0017	mg/l	3/14	0.0017	mg/l	Maximum
	Total PCBs		17.0	Mg/l	6/14	17.0	Mg/l	maximum
	Arsenic		3.1	Mg/l	10/14	3.1	Mg/l	Maximum

Table 3 Conceptual Site Model for SCP Site for Pathways That Were Screened Out or Exhibited Unacceptable Cancer Risks and Non-Cancer Health Hazards..

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/ Future	Soil	Surface Soil	Surface Soil	Site Worker	Adult	Ingestion Dermal	On-Site	Quant	Current on-site workers may be exposed to contaminated materials
			Particulates	Site Worker	Adult	Inhalation	On-Site	Quant.	Current on-site workers may be exposed to wind blown particulates on site if the interim cap is not adequately maintained.
			Volatiles	Site Worker	Adult	Inhalation	On-Site	Quant.	Current on-site workers may be exposed to wind blown volatiles on site if the interim cap is not adequately maintained.
Future	Soil	Surface Soil	Surface Soil	Adolescent Trespasser	Adolescent	Ingestion Dermal.	On-Site	Quant.	Area capped under interim remedy. Potential for future exposures if cap is not maintained.
			Particulates	Adolescent Trespasser	Adolescent	Inhalation	On-Site	Quant.	Area capped under interim remedy. Potential for future exposures if cap is not maintained.
			Volatiles	Adolescent Trespasser	Adolescent	Inhalation	On-Site	Quant.	Area capped under interim remedy. Potential for future exposures if cap is not maintained.
Current/ Future	Surface Soil	Surface Soil	Volatiles (Windblown)	Off-Site Resident	Adult	Inhalation	Off-Site	Quant.	Area zoned industrial. Off-site resident is over 1 mile away from site. Screening level assessment found cancer risks and non-cancer health hazards at or below levels of concern.
Current/ Future	Surface Soil	Surface Soil	Volatiles (Windblown)	Off-Site Resident	Child	Inhalation	Off-Site	Quant.	Area zoned industrial. Off-site resident is over 1 mile away from site. Screening level assessment found cancer risks and non-cancer health hazards at or below levels of concern.

Current/ Future	Surface Soil	Surface Soil	Particulates (Windblown)	Off-Site Resident	Adult	Inhalation	Off-Site	Quant.	Area zoned industrial. Off-site resident is over 1 mile away from site. Screening level assessment found cancer risks and non-cancer health hazards at or below levels of concern.
Current/ Future	Surface Soil	Surface Soil	Particulates (Windblown)	Off-Site Resident	Child	Inhalation	Off-Site	Quant.	Area zoned industrial. Off-site resident is over 1 mile away from site. Screening level assessment found cancer risks and non-cancer health hazards at or below levels of concern.
Future	Ground water- Shallow	Groundwate r - Shallow	Tap Water	Site Worker	Adult	Ingestion	On-Site	Quant.	On-site workers may use aquifer for drinking water purposes in future.
	Soil	Subsurface Soil	Subsurface Soil	Construction worker	Adult	Ingestion/ Dermal	On-Site	Quant.	Potential site development may involve construction activities.
	Soil	Subsurface Soil	Particulates	Construction Worker	Adult	Inhalation	On-Site	Quant.	Potential site development may involve construction activities.

Table 4A Oral Cancer Toxicity Values for Chemicals of Concern.

Chemical of Concern	Oral Cancer Slope Factor	Dermal Cancer Slope Factor	Slope Factor Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (mm/dd/yyyy)
Tetrachloroethylene	5.2 x 10E-2	5.2 x 10E-2	mg/kg-day-1	B2	NCEA	07/05/00
Trichloroethylene	1.1x10E-02	1.1x10E-02	mg/kg-day-1	C/B2	NCEA	07/05/00
Benzo-a-anthracene	7.3	7.3	mg/kg-day-1	B2	NCEA	07/05/00
Benzo-a-pyrene	7.3	7.3	mg/kg-day-1	B2	IRIS	07/05/00
Dibenzo(ah) anthracene	7.3	7.3	mg/kg-day-1	B2	NECA	07/05/00
Indeno(1,2,3-cd) pyrene	0.73	0.73	mg/kg-day-1	B2	NECA	07/05/00
N-nitroso-diphenylamine	4.9 x 10E-03	4.9 x 10E-03	mg/kg-day-1	B2	IRIS	07/05/00
1,1,-dichloro-ethylene	0.6	0.6	mg/kg-day-1	C	IRIS	07/05/00
Vinyl chloride	1.9	1.9	mg/kg-day-1	A	IRIS	07/05/00
Aldrin	17.0	17.0	mg/kg-day-1	B2	IRIS	07/05/00
Dieldrin						
Total PCBs	2.0	2.0	mg/kg-day-1	B2	IRIS	07/05/00
Arsenic	1.5	1.5	mg/kg-day-1	A	IRIS	07/05/00
1,2-dichloroethane	9.1 x 10E-2	9.1 x 10E-2	mg/kg-day-1	B2	IRIS	07/05/00

Benzidine	230	230	mg/kg-day-1	A	IRIS	07/05/00
Benzene	1.5 to 5.5 x 10E-2	1.5 to 5.5 x 10E-2	mg/kg-day-1	A	IRIS	07/05/00
Chloroform	8.3 x 10E-03	8.3 x 10E-03	mg/kg-day-1	B2	IRIS	07/05/00
1,1,2,2-Tetra chloroethane	0.2	0.2	mg/kg-day-1	C	IRIS	07/05/00
Methylene chloride	7.5 x 10E-03	7.5 x 10E-03	mg/kg-day-1	B2	IRIS	07/05/00
Chlorobenzene	NA	NA		D	IRIS	07/05/00
1,1-Dichloroethane	NA	NA		C	IRIS	07/05/00
1,2-Dichloroethane	9.1 x 10E-1	9.1 x 10E-1	mg/kg-day-1	B2	IRIS	07/05/00
Toluene	NA	NA		D	IRIS	07/05/00
Methyl ethyl ketone	NA	NA		D	IRIS	07/05/00
1,1,1-Trichloro ethane	NA	NA		D	IRIS	07/05/00
Nitrobenze	NA	NA		D	IRIS	07/05/00
Bis-2-ethyl hexyl phthalate	0.014	0.014	mg/kg-day-1	B2	IRIS	07/05/00
Isophorone	9.5 x 10E-04	9.5 x 10E-04	mg/kg-day-1	C	IRIS	07/05/00

Table 4B. Inhalation Cancer Toxicity Values for Chemicals of Concern.

Chemical of Concern	Inhalation Unit Risk Factor	Units	Adjustment	Inhalation Cancer Slope Factor	Units	WOE Class-ification	Source	Date (mm/dd/yyyy)
Chloroform	2.3x10E-5	ug/cubic meter	70/20	8.1x10E-02	mg/kg-day-1	B2	IRIS	07/05/00
1,1-dichloro-ethylene	5.0x10E-5	ug/cubic meter	70/20	1.2x10E+00	mg/kg-day-1	C	IRIS	07/05/00
PCBs	1x10E-4	ug/cubic meter	70/20	4.0x10E-01	mg/kg-day-1	B2	IRIS	07/05/00
Trichloro-ethylene	NA			6.0x10E-03	mg/kg-day-1	B2/C	IRIS	07/05/00
Vinyl Chloride	8.4x10E-5	ug/cubic meter	70/20	3.0x10E-01	mg/kg-day-1	A	IRIS	07/05/00
Arsenic	4.3x10E-3	ug/cubic meter	70/20	1.5x10E+1	mg/kg-day-1	A	IRIS	07/05/00
Chromium VI	1.2x10E-2	ug/cubic meter	70/20	4.0x10E+1	mg/kg-day-1	A	IRIS	07/05/00

Table 5 Non-Cancer Oral Toxicity Values

Chemical of Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Dermal RfD	Dermal RfD Units	Primary Target Organ	Combined Uncertainty/ Modifying/ Factors	Source of RfD Target Organ	Dates of RfD Target Organ (mm/dd/yyyy)
Benzene	Chronic	3x10E-3	mg/kg-day	3x10E-3	mg/kg-day	Blood	1000	NCEA	07/05/00
Chloroform	Chronic	1x10E-2	mg/kg-day	1x10E-2	mg/kg-day	Liver	1000	IRIS	07/05/00
Chloro-benzene	Chronic	2x10E-2	mg/kg-day	2x10E-2	mg/kg-day	Liver	1000	IRIS	07/05/00
1,1-dich-loroethane	Chronic	1x10E-1	mg/kg-day	1x10E-1	mg/kg-day	NOEL	100	HEAST	07/05/00
1,2-dichlo-roethane	Chronic	3x10E-2	mg/kg-day	3x10E-2	mg/kg-day	GI	1000	NCEA	07/05/00
1,1,1-trichl-oroethane	Chronic	0.28	Mg/kg-day	0.28	mg/kg-day	Liver	90	NCEA	07/05/00
Isophorone	Chronic	0.2	Mg/kg-day	0.2	Mg/kg-day	NOAEL	1000	IRIS	07/05/00
Tetrachloroet hylene	Chronic	1x10E-02	mg/kg-day	1x10E-02	mg/kg-day	Liver	1000	IRIS	07/05/00
Toluene	Chronic	2x10E-01	mg/kg-day	2x10E-01	mg/kg-day	Kidney/ Liver	1000	IRIS	03/05/00
Trichloro-ethylene	Chronic	0.006	mg/kg-day	0.006	mg/kg-day	NOAEL	3000	NCEA	07/05/00
Benzidine	Chronic	3x10E-03	mg/kg-day	3x10E-03	mg/kg-day	LOAEL	1000	IRIS	07/05/00

Benzo-a-pyrene	Chronic	NA							07/05/00
Benzo-a-anthracene	Chronic	NA							07/05/00
Benzo-b-fluoranthene	Chronic	NA							07/05/00
Dibenzo-ah-anthracene	Chronic	NA							07/05/00
Indeno (1,2,3-cd) pyrene	Chronic	NA							07/05/00
Methyl ehtyl ketone	Chronic	0.6	Mg/kg-day	0.6	Mg/kg-day	Dec. birth weight	1000	IRIS	07/05/00
Methylene chloride	Chronic	0.06	Mg/kg-day	0.06	Mg/kg-day	Liver	100	IRIS	07/05/00
N-nitroso-diphenyl amine	Chronic	0.02	Mg/kg-day	0.02	Mg/kg-day	LOAEL	3000	NCEA	07/05/00
Nitro-benzene	Chronic	0.0005	mg/kg-day	0.005	mg/kg-day	Liver	10,000	IRIS	07/05/00
Aldrin	Chronic	3x10E-05	mg/kg-day	3x10E-05	mg/kg-day	Liver	1000	IRIS	07/05/00
Dieldrin	Chronic	5x10E-05	mg/kg-day	5x10E-05	mg/kg-day	Liver	100	IRIS	07/05/00
Aroclor 1254	Chronic	2x10E-05	mg/kg-day	2x10E-05	mg/kg-day	Immune System	300	IRIS	07/05/00

Aroclor 1016	Chronic	7x10E-05	mg/kg-day	7x10E-05	mg/kg-day	Reduce Birth Weight	100	IRIS	07/05/00
Arsenic	Chronic	3x10E-04	mg/kg-day	3x10E-04	mg/kg-day	Skin	3	IRIS	07/05/00
1,1,-dichl-oroethylene	Chronic	9x10E-03	mg/kg-day	9x10E-03	mg/kg-day	Liver	1,000	IRIS	07/05/00
Bis-2-ethyl hexylphthala te	Chronic	2x10E-02	mg/kg-day	2x10E-02	mg/kg-day	Liver	1000	IRIS	07/05/00
1,1,2,2-tetra chloroethane	Chronic	6x10E-02	mg/kg-day	6x10E-02	mg/kg-day	Liver	1000	NCEA	07/05/00
Aroclor 1254	Sub-Chronic	5x10E-5	mg/kg-day	5x10E-05	mg/kg-day	Immune System	100	HEAST	07/05/00
Chemical of Concern	Chronic/ Subchronic	Inhalation RfC	Inhalation RfC Units	Inhalation RfD	Inhalation RfD Units	Primary Target Organ	Combined Uncer-tainty/ Modifying Factors	Sources of RfD:RfD: Target Organ	Dates (mm/dd/ yyyy)
Chloroform	Chronic			8.6x10E-05	mg/kg-day	Liver		NCEA	07/05/00

Table 6A Summary of Cancer Risks Greater than 1 x 10E-06 for Specific RME Receptors

Scenario Timeframe: Current/Future
Receptor Population: Adult On-Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Ingestion	Inhalation	Dermal	External Radiation	Exposure Routes Total
Surface Soil (0 to 2 feet)	Surface Soil (0 to 2 feet)	Soil On-site Direct Contact	Tetrachloro ethylene	3.9x10E-05				3.9x10E-05
			Trichloro ethylene	2.2x10E-06	7.6x10E-08			2.2x10E-06
			Benzo-a-anthracene	5.8x10E-06				5.8x10E-06
			Benzo-a-pyrene	1.2x10E-05				1.2x10E-05
			Benzo-b-fluoranthene	2.2x10E-06				2.2x10E-06
			Dibenzo-ah anthracene	3.1x10E-06				3.1x10E-06

			Indeno (123-cd) pyrene	1.5x10E-06				1.5x10E-06
			N-nitroso-diphenylamine	2.6x10E-06				2.6x10E-06
			1,1-dichloroethylene	1.9x10E-08	2.6x10E-06			2.6x10E-06
			Vinyl Chloride		2.1x10E-06			2.1x10E-06
			Aldrin	1.7x10E-04				1.7x10E-04
			Dieldrin	1.6x10E-04				1.6x10E-04
			Total PCBs	5.3x10E-03	5.6x10E-08	9.7x10E-03		1.5x10E-02
			Arsenic	1.6x10E-05		2.9x10E-05		4.5x10E-05
						Total Cancer Risk		1.5x10E-2
Ground water	Ground water	On-site Direct Contact	Benzene	8.9x 10E-04				8.9x 10E-04
			Chloroform	1.4x10E-02				1.4x10E-02
			1,2-dichloroethane	1.5x10E-01				1.5x10E-01
			Vinyl chloride	4.8x10E-02				4.8x10E-02

			1,1,2,2- tetra chloroethene	5.1x10E-03				5.1x10E-03
			Tetrachoro-ethylene	4.5x10E-03				4.5x10E-03
			Methylene chloride	5.2x10E-03				5.2x10E-03
			Trichloro-ethylene	8.2x10E-03				8.2x10E-03
			Total PCBs	2.4x10E-02				2.4x10E-02
			Arsenic	1.6x10E-02				1.6x10E-02
						Total Cancer Risk		2.5x10E-1
						Total Risk		2.6x10E-1

Table 6B Summary of Cancer Risks Greater than 1 x 10E-06 for Specific CTE Receptors

Scenario Timeframe: Current/Future
Receptor Population: Adult On-Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Ingestion	Inhalation	Dermal	External Radiation	Exposure Routes Total
Surface Soil (0 to 2 feet)	Surface Soil (0 to 2 feet)	Soil On-site Direct Contact	Aldrin	3.9 x 10E-05				3.9x10E-05
			Dieldrin	3.7x10E-05				3.7x10E-05
			Total PCBs	1.2x10E-03				1.2x10E-03
						Total Cancer Risk		1.2x10E-03
Ground water	Ground water	On-site Direct Contact	Benzene	1.4x 10E-04				1.4x 10E-04
			Chloroform	2.2x10E-02				2.2x10E-02
			1,2-dichloro ethane	2.4x10E-02				2.4x10E-02
			1,1,2,2-tetra chloroethene	5.1x10E-03				5.1x10E-03

			Tetrachoro-ethylene	7.2x10E-04				7.2x10E-04
			Trichloro-ethylene	1.0x10E-02				1.0x10E-02
			Vinyl Chloride	7.9x10E-03				7.9x10E-03
			Total PCBs	2.9x10E-03				2.9x10E-03
			Arsenic	2.6x10E-03				2.6x10E-03
						Total Cancer Risk		4.7x10E-02
						Total Risk		4.8x10E-02

Table 6C. Summary of Cancer Risk Greater than 1 x 10E-06 for Specific RME Recptors

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescentt

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Ingestion	Inhalation	Dermal	External Radiation	Exposure Routes Total
Surface Soil (0 to 2 feet)	Surface Soil (0 to 2 feet)	Soil On-site Direct Contact	Tetrachloro ethylene	1.4 x 10E-05				1.4x10E-05
			Benzo-a-anthracene	2.1x10E-06				2.1x10E-06
			Benzo-a-pyrene	4.3x10E-06				4.3x10E-06
			Dibenzo-ah anthrancene	1.1x10E-06				1.1x10E-06
			Aldrin	6.15x10E-05				6.1x10E-05
			Dielrin	5.8x10E-05				5.8x10E-05
			Total PCBs	1.9x10E-03	2.1x10E-08	4.6x10E-04		2.4x10E-03
			Arsenic	5.7x10E-06		1.4x10E-06		7.1x10E-06
						Total Cancer Risk		2.5x10E-03
						Total Risk		2.6x10E-1

Table 6D. Summary of Cancer Risks Greater than 1 x 10E-06 for Specific CTE Receptors

Scenario Timeframe: Current/Future Receptor Population: Trespasser Receptor Age: Adolescentt								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Ingestion	Inhalation	Dermal	External Radiation	Exposure Routes Total
Surface Soil (0 to 2 feet)	Surface Soil (0 to 2 feet)	Soil On-site Direct Contact	PCBs	4.8 x 10E-04				4.8x10E-04
						Total Cancer Risk		4.8x10E-04

Table 6E. Summary of Cancer Risks Greater than 1 x 10E-06 for Specific RME Receptors

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Ingestion	Inhalation	Dermal	External Radiation	Exposure Routes Total
Subsurface Soil (5 to 6 feet)	Subsurface Soil (5 to 6 feet)	Subsurface Soil On-site Direct Contact	1,2-Dichloro-ethane	1.2 x 10E-06				1.2x10E-06
			Tetrachl-oroethtylene	4.2x10E-06				4.2x10E-06
			Benzidine	2.7x10E-03				2.7x10E-03
			Benzo-a-anthracene	3.0x10E-05				3.0x10E-05
			Benzo-a-pyrene	3.8x10E-05				3.8x10E-05
			Benzo(b) fluoranthene	5.5x10E-06				5.5x10E-06
			Indeno(123-cd)pyrene	3.1x10E-06				3.1x10E-06
			Total PCBs	3.6x10E-05		1.0E-05		4.6x10E-05

			Arsenic	4.5x10E-06		2.8x10E-07		4.5x10E-06
						Total Cancer Risk		2.8x10E-03

Table 6F. Summary of Cancer Risks Greater than 1 x 10E-06 for Specific RME Receptors

Scenario Timeframe: Future Receptor Population: Construction Worker Receptor Age: Adult								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Ingestion	Inhalation	Dermal	External Radiation	Exposure Routes Total
Subsurface Soil (Deep)	Subsurface Soil (Deep)	Subsurface Soil On-site Direct Contact	Tetrachloro ethylene	2.3x10E-06				2.3x10E-06
			Vinyl Chloride	1.5x10E-06				1.5x10E-06
			Benzo(a) pyrene	1.7x10E-06				1.7x10E-06
			Total PCBs	1.1x10E-06				1.1x10E-06
			Arsenic	1.3x10E-06				1.3x10E-06
						Total Cancer Risk		7.9x10E-06

Table 6F. Summary of Cancer Risks Greater than 1 x 10E-06 for Specific RME Receptors

Scenario Timeframe: Future Receptor Population: Construction Worker Receptor Age: Adult								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Ingestion	Inhalation	Dermal	External Radiation	Exposure Routes Total
Subsurface Soil (Very Deep)	Subsurface Soil (Very Deep)	Subsurface Soil On-site Direct Contact	Tetrachloro ethylene	1.3x10E-06				1.3x10E-06
						Total Cancer Risk		1.3x10E-06

Table 7A. Non-Cancer Health Hazards for RME Individual (HIs>1.0)

Scenario Timeframe: Current/Future Receptor Population: On-Site Worker Receptor Age: Adult								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes total
Surface Soil (0 to 2 feet)	Surface Soil (0 to 2 feet)	On-Site Direct Contact	Aroclor 1242	Reduced Birthweight	100.0		190.0	290.0
			Aroclors 1248, 1254, and 1260	Immune System	2		3.8	5.8
						Total Soil - HI		295.8
Ground-water	Ground-water	Ground-water Direct Contact	Benzene	Blood	24.0			24.0
			Chloroform	Liver	600			600
			Chloro-benzene	Liver	2.0			2.0
			1,2-Dichloro-ethane	GI	150.0			150.0

			1,2- dichloro-ethylene (cis)	Blood	32.0			32.0
			Tetrachloro ethylene	Liver	24.0			24.0
			Toluene	Kidney	4.4			4.4
			Methylene chloride	Liver	33.0			33.0
			Trichloro-ethylene	NOAEL	260.0			260.0
			1,1,1-Trichloro-ethane	Liver	2.8			2.8
			Vinyl Chloride	Liver	14.0			14.0
			Nitro-benzene	Liver	1,100			1,100
			Aroclor 1254	Immune	2,400			2,400
			Arsenic	Skin	100			100
						Total Drinking Water HIs		4,746.2
						Total HIs		5,042.0

Table. 7B. Non-Cancer Health Hazards for CTE Individual (HIs > 1.0)

Scenario Timeframe: Current/Future Receptor Population: On-Site Workers Receptor Age: Adults								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes total
Surface Soil (0 to 2 Feet)	Surface Soil (0 to 2 Feet)	On-Site Direct Contact	Aroclor 1242	Reduced Birthweight	92.0		17	109
			Aroclors 1248, 1254, and 1260	Immune System	1.8		0.33	2.1
						Total Soil - HI		111.1
			Benzene	Blood	15.0			15.0
			Chloroform	Liver	600			600
			Chlorobenz ene	Liver	2.0			2.0
			1,2-Dichlororeth ane)	GI	150.0			150.0
			1,2-dichloroeth ylene (cis)	Blood	32.0			32.0

			Tetrachloro ethylene	Liver	24.0			24.0
			Toluene	Kidney	4.4			4.4
			Methylene chloride	Liver	33.0			33.0
			Trichloroeth ylene	NOAEL	260.0			260.0
			1,1,1-Trichloroeth ane	Liver	2.8			2.8
			Vinyl Chloride	Liver	14.0			14.0
			Nitrobenzene	Liver	1,100			1,100
			Aroclor 1254	Immune	2,400			2,400
			Arsenic	Skin	100			100
						Total Drinking Water HIs		4,746.2
						Total HIs		5,042.0

Table. 7C.. Non-Cancer Health Hazards for RME Individual (HIs > 1.0)

Scenario Timeframe: Future Receptor Population: Trespassers Receptor Age: Adolescents								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes total
Surface Soil (0 to 2 Feet)	Surface Soil (0 to 2 Feet)	On-Site Direct Contact	Aroclor 1242	Reduced Birthweight	110.0		120.0	230.0
			Aroclors 1248, 1254, and 1260	Immune System	2		2.3	4.3
						Total Soil - HI		234.3

Table. 7.D. Non-Cancer Health Hazards for CTE Individual (HIs > 1.0)

Scenario Timeframe: Future Receptor Population: Trespassers Receptor Age: Adolescents								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes total
Surface Soil (0 to 2 Feet)	Surface Soil (0 to 2 Feet)	On-Site Direct Contact	Aroclor 1242	Reduced Birthweight	26.0		12.0	38.0
						Total Soil - HI		38.0

Table. 7E. Non-Cancer Health Hazards for RME Individual (HIs > 1.0)

Scenario Timeframe: Current/Future Receptor Population: On-Site Workers Receptor Age: Adults								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes total
Surface Soil (5 to 6 Feet)	Surface Soil (5 to 6 Feet)	On-Site Direct Contact	Aroclor 1242	Reduced Birthweight	24.0		6.9	30.9
						Total Soil - HI		30.9
						Total HIs		5,042.0

APPENDIX III
ADMINISTRATIVE RECORD INDEX

SCIENTIFIC CHEMICAL PROCESSING (CARLSTADT) SITE
OPERABLE UNIT II
ADMINISTRATIVE RECORD
INDEX OF DOCUMENTS

1.0 SITE IDENTIFICATION

1.5 Previous Operable Unit Information

P. 100001 - 100212 Report: Final Report. Remedial Investigation. SCP Site, Carlstadt, New Jersey. Volume 1. (Text, Tables and Figures), prepared by Dames 6 Moore, March 1, 1990.

Declaration Statement, Record of Decision, Scientific Chemical Processing Site, September 14, 1990. (Note: This document can be found in the Scientific Chemical Processing (Carlstadt) OU1 Administrative Record, pages 4567-4650).

P. 100213 – 100442 Report: Final Work Plan. Interim Remedy. Remedial Design Work Plan, Superfund Site at 216 Paterson Plank Road at Carlstadt. New Jersey, prepared by Canonie Environmental, prepared for The Cooperating PRP Group, March, 1991.

P. 100443 – 101002 Report: Final Report. Interim Remedy For First Operable Unit, Scientific Chemical Processing Superfund Site At 216 Paterson Plank Road, Carlstadt. New Jersey, prepared by Canonie Environmental, September 1992.

P. 101003 - 101197 Report: Focused Feasibility Study. Investigation Work Plan, First Operable Unit Fill. 216 Paterson Plank Road Site, Carlstadt, New Jersey, prepared by Golder Associates, prepared for The 216 Paterson Plank Road Cooperating PRP Group, April 1996.

P. 101198 – 101353 Report: Focused Feasibility Study. Investigation Report, 216 Paterson Plank Road Site, Carlstadt, New Jersey, prepared by Golder Associates, Inc., prepared for The 216 Paterson Plank Road Cooperating PRP Group, November 1997.

P. 101354 - 101953 Report: Investigation Derived Waste and Sludge Tank Management Documentation Report, 216 Paterson Plank Road Site, Carlstadt, New Jersey, prepared by Golder Associates, Inc,, prepared for The 216 Paterson Plank Road Cooperating PRP Group, July 1998.

P. 101954 - 102220 Report: First Operable Unit, Treatability Testing Work Plan, 216 Paterson Plank Road Site, Carlstadt. New Jersey, prepared by Golder Associates, Inc., prepared for The 216 Paterson Plank Road Cooperating PRP Group, August 1998.

P. 102221 - 102224 Report: Five-Year Review Report. Scientific Chemical Processing Site, Carlstadt, Bergen County, New Jersey, prepared by U.S. EPA, Region II, September 1998.

P. 102225 - 102255 U.S. EPA, Region II, Administrative Order. Index No. II, CERCLA-00116, undated

4.0 FEASIBILITY STUDY

4.3 Feasibility Study Reports

P. 400001 - 400392 Report: Focused Feasibility Study, Operable Unit 2, Final Remedy: Fill and Shallow Groundwater, 216 Paterson Plant Road Site. Carlstadt. New Jersey, prepared by Golder Associates, prepared for 216 Paterson Plank Road Cooperating PRP Group, April 2001.

APPENDIX IV
STATE LETTER

James E. McGreevey
Governor

State of New Jersey
Department of Environmental Protection

Bradley M. Campbe
Commis

June 28, 2002

Ms. Jane Kenney, USEPA Administrator
US Environmental Protection Agency
290 Broadway
New York, NY 10007-1866

Re: Final Record of Decision for Scientific Chemical Processing, Inc. Superfund Site Operable Unit 2, Carlstadt Township, Bergen County, New Jersey

Dear Ms. Kenney:

This is to formally notify the United States Environmental Protection Agency (USEPA) that the New Jersey Department of Environmental Protection (NJDEP) has evaluated the selected final remedy for Operable Unit 2 - Fill Area at the Scientific Chemical Processing, Inc. Superfund Site and concurs with the remedy as stated in the Record of Decision.

The Record of Decision documents the selection of a containment remedy with in-situ treatment (air stripping) of the hot spot area followed by solidification / stabilization, landfill cap containment cover system, and shallow groundwater collection for the OU2 - Fill Area. If the appropriate performance standards for treatment, solidification and containment are not met in the selected remedy, then removal of the hot spot area, as described in Alternative SC-3, will be preformed as a contingency remedy. Deed Notices will be established as an institutional control component for this remedy. In addition, all groundwater (on-site and off-site) and surface water (Peach Island Creek) sampling/investigations will continue to be conducted in preparation for the development of remedial alternatives for a groundwater/surface water contamination OU3 remedy.

The objectives of the Remedial Action for the OU2 Fill Area are to:

- Mitigate the direct contact risk and leaching of contaminants from soil, fill material and sludge into the groundwater;
- Reduce the toxicity and mobility of the hot spot contaminants via treatment;
- Provide hydraulic control of the shallow aquifer by maintaining an inward groundwater gradient;
- Protect human health and the environment by implementing institutional controls (Deed Notices) as necessary; and
- Perform remediation in such a manner that may allow site re-use for certain limited commercial purposes.

New Jersey fully appreciates the importance of the Record of Decision in the cleanup process and will continue to take all reasonable steps to ensure that the State's commitments in this area are met.

Sincerely,

Bryan Van Hook, Assistant Commissioner
Site Remediation Program

C: Bruce Venner, BCM

APPENDIX V
RESPONSIVENESS SUMMARY

APPENDIX V

RESPONSIVENESS SUMMARY
SCIENTIFIC CHEMICAL PROCESSING SUPERFUND SITE
OPERABLE UNIT 2

INTRODUCTION

This Responsiveness Summary provides a summary of the public's comments and the concerns regarding the Proposed Plan for the Scientific Chemical Processing (SCP) Superfund Site, and the U. S. Environmental Protection Agency's (EPA's) responses to those comments. At the time of the public comment period, EPA proposed a preferred alternative for remediating and containing the contamination in the SCP Site's Fill Area, which has been designated Operable Unit 2 (OU2). All comments summarized in this document have been considered in EPA's final decision for selection of a remedial alternative for OU2.

This Responsiveness Summary is divided into the following sections:

I. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS: This section provides the history of community involvement and interests regarding the SCP Site.

II. COMPREHENSIVE SUMMARY OF MAJOR QUESTIONS, COMMENTS, CONCERNS AND RESPONSES: This section contains summaries of oral comments received by EPA at the public meeting, EPA's responses to these comments, as well as responses to written comments received during the public comment period.

The last section of this Responsiveness Summary includes attachments which document public participation in the remedy selection process for this site. They are as follows:

Attachment A contains the Proposed Plan that was issued on August 15, 2001 and distributed to the public for review and comment;

Attachment B contains the public notices that appeared in The Bergen Record;

Attachment C contains the transcript of the public meeting; and

Attachment D contains the written comments received by EPA during the public comment period.

I. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

Aside from periodic interaction with the adjacent industrial land owners, since the issuance of the OU1 Record of Decision in September 1990, the level of community interest in the SCP site has been low. EPA and the Potentially Responsible Parties (PRPs) have addressed relatively minor issues mainly regarding property access for off-site well sampling/installation and issues about Site aesthetics. In response to local concerns, the PRPs planted evergreen shrubbery on the Paterson Plank Road side of the Site, and painted the on-site groundwater temporary storage tank. Since these actions were taken, there has been no major concerns raised by the local community.

OU1 Remedy: The RI/FS Report, the Proposed Plan and other documents which comprise the administrative record of the interim remedy (i.e., OU1) were released to the public on May 19, 1990. These documents were made available to the public at the William E. Dermody Free Library in Carlstadt, New Jersey. On May 19, 1990, EPA also published a notice in the Bergen Record which contained information relevant to the public comment period for the site, including the duration of the public comment period, the date of the public meeting and availability of the administrative record. The public comment period began on May 19, 1990 and ended on June 18, 1990. In addition, a public meeting was held on June 5, 1990, at which representatives from EPA and the New Jersey Department of Environmental Protection (NJDEP) answered questions regarding the site and the interim actions under consideration. Responses to the significant comments received during the public comment period are included in the 1990 ROD's Responsiveness Summary.

OU2 Remedy: EPA's Proposed Plan for the Operable Unit 2 was released to the public on August 15, 2001. A copy of the Proposed Plan was placed in the Administrative Record and was made available in the information repository at the William E. Dermody Free Public Library. A public notice was published in the Bergen Record on August 15, 2001, advising the public of the availability of the Proposed Plan. The notice also announced the opening of a 30-day public comment period and invited all interested parties to attend an upcoming public meeting. Due to disruption of mail delivery to EPA's offices in downtown Manhattan, relating to the events of September 11, 2001, a second public notice was published in the Bergen Record on October 12, 2001 extending the comment period until October 25, 2001. A public meeting, during which EPA presented the preferred remedial alternative for OU2, was held at the Carlstadt Borough Hall, 500 Madison Street, Carlstadt, New Jersey on August 23, 2001.

Overall, the public agreed with EPA's decision not to attempt full excavation of the Fill Area. Some of the public felt it more prudent to neither attempt to treat nor remove the Sludge Area, while some felt that removal rather than treatment was the best option. However, there was no strong feeling about the specific remediation of the Sludge Area aside from the obvious need to ensure that human exposure to Sludge Area contaminants be prevented.

II. COMPREHENSIVE SUMMARY OF MAJOR QUESTIONS, COMMENTS, CONCERNS, AND RESPONSES

This section summarizes comments received from the public during the public comment period, and EPA's responses.

A. SUMMARY OF QUESTIONS AND EPA's RESPONSE FROM THE PUBLIC MEETING CONCERNING THE SCIENTIFIC CHEMICAL PROCESSING SITE - AUGUST 23, 2001

A public meeting was held on August 23, 2001 at 7:00 p.m. at the Carlstadt Borough Hall, 500 Madison St., Carlstadt, NJ. EPA and the PRP's consultant gave a presentation on the investigation findings, the Proposed Plan, and the preferred alternative for the SCP Site.

Comment #1: A citizen asked to have the on- site air stripping of the sludge area better described. Specifically, he wished to know how the contamination stripped from the sludge would be treated and whether PCBs would be removed by the air stripping process.

EPA Response: There are several ways that air can be treated. EPA will probably consider one of two options during design: oxidation treatment which would effectively destroy the contamination on-site or carbon adsorption, whereby the organics removed from the sludge would be adsorbed onto carbon. The carbon would then be taken off site by the carbon vendor for treatment. PCBs are not volatile and therefore would not be removed by the air stripping. PCBs in the sludge would be controlled by stabilizing the Sludge Area with cement and lime, subsequent to treatment by air stripping.

Comment #2: A citizen asked for some examples of organic substances and also whether any of them are suspected carcinogens.

EPA Response: Some of the examples of organic substances found at the SCP site are trichloroethylene, tetrachloroethylene, toluene, benzene and xylene. Some of these are suspected carcinogens. See Table 2 and Table 3 of the ROD for more information.

Comment #3: A citizen was concerned about the potential for releases of potential carcinogens, and whether the treatment methods would be effective in removing the carcinogens to appropriate levels.

EPA Response: As stated in the previous response, EPA will decide the specific method to treat the contaminated air stripped from the soil during the design phase of the cleanup. During the operation of the selected air stripping method, small shrouds will be placed directly over the paddles and negative pressure will be maintained within the shroud to capture the volatile organic compounds released during mixing. Whatever decision is made, EPA will ensure compliance with all federal and state air regulatory requirements. Compliance will be assured by, among other things, air monitoring around the site perimeter. EPA will also meet with the public during the design phase to get input and hear potential concerns about the design.

Comment #4: One citizen expressed concern that Alternative SC-5 required the use of hot air, and that the air will find specific channels in the sludge and therefore not strip off all the contaminants. This citizen felt that Alternative SC-3 (removal of Hot Spot) was a better alternative than the Preferred Alternative (i.e., Alternative SC-5).

EPA Response: The air stripping technology described in Alternative SC-5 has been used to effectively treat contaminated sludges at other sites. EPA feels that the process, which includes not only aeration, but also mixing, will adequately prevent air from channeling within the sludge, and will remove the volatile organic compounds to acceptable levels. However, if the Preferred Alternative does not meet acceptable levels for both removal of VOCs and stabilization, the Sludge Area will be removed as described in Alternative SC- 3, and as the commentor suggested.

Comment #5: A citizen asked the dimensions of the Sludge Area. The citizen also expressed concern that as the aeration apparatus is moved around the Sludge Area, holes will be left and the contaminants in the sludge around the holes will be able to escape to the air.

EPA Response: The Sludge Area is approximately 4,000 square feet. The commentor's concern may be from a misunderstanding of the treatment process. The selected alternative will not be removing any sludge, rather air will be forced into one small, shroud covered area at a time within the Sludge Area. As the air is being forced into the small area, mixing paddles will ensure the sludge is adequately treated. No holes will be left open in the Sludge outweighs any potential benefit of contaminant removal/stabilization.

EPA Response: The Commentor is correct in that the permanent containment remedy would, in all likelihood, effectively control and prevent exposure to the contaminants in the Sludge Area. However, due to the extremely high concentrations found in the Sludge Area, the relatively small size of the Sludge Area, and the fact the Sludge Area lends itself to treatment/ stabilization, EPA feels treatment of the Sludge Area is appropriate. This decision is consistent with the regulatory requirements of CERCLA, i.e., to treat the principal threat, which at this Site is the Sludge Area.

Comment 10: One commentor wished to know the maximum depth of the Sludge Area treatment, whether the contamination is worse at depth, and whether the contamination would get worse over time.

EPA Response: The maximum depth at which aeration and stabilization of the Sludge Area will occur is about fifteen feet. The concentration of the contamination varies with depth, however there is no clear gradation based on depth within the Sludge Area. Some of the contaminants within the sludge area break down into less toxic chemicals over time; some break down into more toxic chemicals.

C. WRITTEN COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD FROM THE COMMUNITY AND PRP

Comments and concerns were accepted in writing during the public comment period. Written comments were received in a letter from the PRPs’ consultant and from one citizen who attended the public meeting. They are answered in the following part of the Responsiveness Summary.

Comment 11: Mr Sam Chari, Ph. D., P.E., in his September 12, 2001 letter to EPA, indicated that he felt strongly that Alternative SC-3, removal of the Sludge Area, was the best remedy for the Site. His reasoning was based on his belief that the Sludge Area was not homogeneous, that air from the air stripper (used in the Selected Alternative) would escape through channels in the sludge and therefore not treat all the sludge and that rocks and debris that may be in the sludge would interfere and cause equipment to break down. The commentor felt that EPA's assessment that Alternative SC-3 had difficult technical problems and risks to workers, the underlying clay layer and to the neighboring communities was overstated. He also felt that the relatively small difference in cost and timeframe should not have been a large factor in selecting Alternative SC-5 rather than Alternative SC-3.

EPA Response: All studies done to date have indicated that the Sludge Area is homogeneous in material. EPA does not expect to find large amounts of debris in the Sludge Area. If, as the commentor claims, large amounts of debris exist in the Sludge Area, then it may preclude, due to technical issues, implementing either Alternative SC-3 or the Selected Alternative. However, as stated previously, EPA does not expect to find debris, and based on other sites and the treatability studies performed using the sludge, the aeration/ stabilization technology is expected to work well to remedy and contain the contaminants in the Sludge Area. Alternative SC-3, while technically possible, has added potential risks to the clay layer and workers, without any real benefits over the Selected Remedy. Based on the above, EPA believes the appropriate decision is to proceed with the Selected Remedy. Again, if the Selected Remedy fails to work acceptably, EPA will direct the PRPs to remove the Sludge Area as described in Alternative SC-3. Costs and timeframes were not the only factors in the decision to select Alternative SC-5 over Alternative SC-3.

Comment 12: This comment was submitted by the PRPs' consultant Golder Associates. The PRPs asked that Page 10 of the Proposed Plan be clarified. Specifically, they asked for clarification on whether New Jersey Soil Cleanup Criteria (NJSCC) are ARARs.

EPA Response: The NJSCC are not ARARs; rather, they are To-Be-Considered (TBC) criteria.

Comment 13: This comment was also submitted by the PRPs. The PRPs noted that on Page 10 of the Proposed Plan, it indicated that all of the alternatives must comply with the New Jersey Technical Requirements for Site Remediation, the New Jersey Brownfield and Contaminated Site Remediation Act and any relevant local requirements. The PRPs requested that EPA clarify whether compliance with the substantive requirements of promulgated state regulations is only required when they are ARARs and more stringent than federal standards. Further, they requested clarification that aspects of the cited regulations that are not ARARs, as well as non-substantive requirements, are therefore not mandatory.

EPA Response: The PRPs are correct in their belief that requirements of promulgated state regulations are only required when they are ARARs and when they are more stringent than federal standards. Also, any aspects of the regulations cited in Comment 13 that are not ARARs, as well as any non-substantive requirements are not mandatory. However, when no ARARs exist, EPA can establish cleanup standards based on non-ARARs such as TBCs.

ATTACHMENT A
PROPOSED PLAN

Superfund Program
Proposed Plan

U.S. Environmental Protection
Agency, Region II

Scientific Chemical Processing Site
August 2001

EPA ANNOUNCES PROPOSED PLAN

This Proposed Plan identifies the Preferred Alternative for the final remedy for the contaminated soil on the Scientific Chemical Processing (SCP) Site, hereafter referred to as "the Site," located in Carlstadt Township, Bergen County, New Jersey, and provides the rationale for this preference. In addition, this Plan includes summaries of the other alternatives evaluated for use at this Site. The preferred alternative calls for improving and making permanent the key elements of the SCP Site's existing interim remedy. In addition, in-situ (i.e., in place) treatment followed by in-situ solidification/stabilization of the Hot Spot Area would be performed. Finally, institutional controls in the form of deed notices will be established in order to ensure long term protectiveness of the containment system.

This, document is issued by the U.S. Environmental Protection Agency (EPA), the lead agency for site activities. The New Jersey Department of Environmental Protection (NJDEP) is the support agency for this site. EPA, in consultation with the NJDEP, will select a final remedy for the Site's Fill Area after reviewing and considering all information submitted during the 30-day public comment period. EPA, in consultation with NJDEP, may modify the Preferred Alternative or select another response action presented in this Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all the alternatives presented in the Proposed Plan. A final groundwater and surface water remedy will be addressed in a future Proposed Plan and Record of Decision.

EPA is issuing this Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund) and Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This Proposed Plan summarizes information that can be found in greater detail in the documents contained in the Administrative Record file for this Site. EPA and the State encourage the public to review these documents to gain a more comprehensive understanding of the Site and Superfund activities that have been conducted at the Site.

Dates to remember:
MARK YOUR CALENDAR

PUBLIC COMMENT PERIOD:
August 16, 2001-September 15, 2001.

PUBLIC MEETING:
August 23, 2001 at 7:00pm
U.S. EPA will hold a public meeting to explain the Proposed Plan and all of the alternatives presented in the Feasibility Study. Oral and written comments will also be accepted at the meeting. The meeting will be held at

Carlstadt Borough Hall
500 Madison St.
Carlstadt, NJ

For more Information, see the Administrative Record at the following locations:

William E. Dermody Free Public Library
420 Hackensack St
Carlstadt, NJ
(201) 438-8866
Hours M-Th 10:00am-5:30pm 7:00-9:00pm
Fri 10:00am-5:30pm, Sat 10:00am-1:00pm

And

U.S. EPA Records Center, Region II
290 Broadway, 18th Floor.
New York, New York 10007-1866
(212)-637-3261
Hours: Monday-Friday
9 a.m. to 5 p.m.

SITE HISTORY

The six-acre SCP Site is located at 216 Paterson Plank Road in Carlstadt, New Jersey. The Site is a corner property, bounded by Paterson Plank Road on the south, Gotham Parkway on the west, Peach Island Creek on the north and an industrial facility on the east (figure 1). The land use in the vicinity of the Site is classified as light industrial by the Borough of Carlstadt. The establishments in the immediate vicinity of the Site include a bank, stables, warehouses, freight carriers, and service sector industries. There is a residential area located approximately 6,000 feet northwest of the Site.

The land on which the SCP Site is located was purchased in 1941 by Patrick Marrone who used the land for solvent refining and solvent recovery. Mr. Marrone eventually sold the land to a predecessor of Inmar Associates, Inc. Aerial photographs from the 1950s, 1960s and 1970s indicate that drummed materials were stored on the Site. On October 31, 1970, SCP Inc. leased the Site from Inmar Associates. SCP used the Site for processing industrial wastes from 1971 until the company was shut down by court order in 1980.

While in operation, SCP received liquid byproduct streams from chemical and industrial manufacturing firms, then processed the materials to reclaim marketable products, which were sold to the originating companies. In addition, liquid hydrocarbons were processed to some extent, then blended with fuel oil. The mixtures were typically sold back to the originating companies, or to cement and aggregate kilns as fuel. SCP also received other wastes, including paint sludges, acids and other unknown chemical wastes.

In 1983, the Site was placed on the National Priorities List (NPL). Between 1983 and 1985, NJDEP required the site owner to remove approximately 250,000 gallons of wastes stored in tanks, which had been abandoned at the Site.

In May 1985, EPA assumed the lead role in the response actions, and issued notice letters to over 140 Potentially Responsible Parties (PRPs). EPA offered the PRPs an opportunity to perform a Remedial Investigation and Feasibility Study (RI/FS) for the Site. The purpose of an RI/FS is to determine the nature and extent of a site's contamination, and then to develop remedial alternatives which address the contamination. In September 1985, EPA issued Administrative Orders on Consent to the 108 PRPs who had agreed to conduct the RI/FS. Subsequently, in October 1985, EPA issued a Unilateral Order to 31 PRPs who failed to sign the Consent Order. The Unilateral Order required the 31 PRPs to cooperate with the 108 consenting PRPs on the RI/FS. In the fall of 1985, EPA also issued an Administrative Order to Inmar Associates, requiring the company to remove and properly dispose of the contents of five tanks containing wastes contaminated with Polychlorinated Biphenyls (PCBs) and numerous other hazardous substances.

Inmar removed four of the five tanks in 1986. The fifth tank was not removed at the time due to the high levels of PCBs and other contaminants found in that specific tank, and the unavailability of disposal facilities capable of handling those wastes at that time. The fifth tank and its contents were subsequently removed by the PRPs in February 1998.

The PRPs initiated the RI/FS in April 1987. In March 1990, a final RI was completed. The RI focused on the most heavily contaminated zone at the Site which included the contaminated soils, sludges and shallow groundwater down to the clay layer (hereinafter, this zone will be referred to as the "Fill Area"). The RI also collected data from the deeper groundwater areas. The deeper areas consist of the till aquifer, which lies just under the Fill Area's clay layer, and the bedrock aquifer which underlies the till aquifer. Groundwater within both the till aquifer and bedrock aquifer was found to be contaminated with site-related compounds. The RI also found that the adjacent Peach Island Creek's surface water and sediments were impacted by contaminants similar to those found in the Fill Area.

Prior to issuing a final RI, an FS was completed in 1989. Based on data from the draft RI, the FS analyzed alternatives for the Fill Area groundwater and sludge/soils. The alternatives analyzed included the combined use of a slurry wall, dewatering, caps, vacuum extraction and in-situ stabilization technologies. The results of the FS indicated that, although there seemed to be several potential methods or combinations of methods to remedy the Fill Area soil and sludges, there were uncertainties regarding the relative effectiveness of the various technologies. Consequently, EPA made a decision that treatment alternatives needed further assessment. In the meantime, interim measures were necessary to contain and prevent exposure to the Fill Area contaminants. Therefore, based on the findings, of the RI and FS, a Record of Decision (ROD) for an interim remedy for the Fill Area was issued by EPA in September 1990.

Interim Remedy: Soil and Shallow Groundwater on Property (OU1).

EPA typically addresses sites in separate phases and/or operable units. In developing an overall strategy for the SCP Site, EPA has identified the interim Fill Area remedy as Operable Unit 1 (OU1), the final Fill Area remedy as OU2, and the off-property groundwater/Peach Island Creek remedy as OU3.

As stated previously, EPA issued a ROD on September 14, 1990 describing the selection of an interim remedial action for the Fill Area to prevent exposure to site soils and prevent the spread of the contaminated groundwater within the Fill Area from migrating off the property. The interim remedy was constructed from August 1991 through June 1992 by the PRPs for the Site pursuant to a Unilateral Administrative Order dated September 28, 1990 and consists of the following:

1. A lateral containment wall comprised of a soil-bentonite slurry with an integral high density polyethylene (HDPE) vertical membrane which is keyed into the clay layer and circumscribes the property;

2. A sheet pile retaining wall along Peach Island Creek. The retaining wall, which is still in place, was constructed to facilitate installation of the slurry wall;

3. A horizontal infiltration barrier consisting of high density polyethylene covering the property;

4. An extraction system for shallow groundwater consisting of seven (since reduced to five) wells screened in the Fill Area, which discharge to an above ground 10,000 gallon tank via above-grade pipes, The water from the tank is disposed of off-site;

5. A chain link fence which circumscribes the Property; and

6. Quarterly (since made annual) groundwater monitoring for metals and organics. Operation and Monitoring reports on the current conditions at the Site are submitted to EPA on a monthly basis.

The interim remedy has effectively mitigated the risks from direct contact and the spread of Fill Area contamination since its implementation in 1992.

OU2 and OU3

While implementing the interim remedy (i.e., OU1), EPA continued to oversee additional RI/FS work which would provide information to prepare Records of Decision for OU2 and OU3. In March 1994, the PRPs presented to EPA nine remedial technologies which the PRPs considered potentially applicable to the Site. In December of that year, EPA requested that the PRPs further review and reduce the list of potential technologies. In 1995, the PRPs submitted a Focused Feasibility Study Workplan (FFS) to evaluate both the off-property groundwater contamination (to be addressed in OU3) and the following reduced list of remedial technologies for the Fill Area; 1) containment; 2) "hot spot" removal; 3)stabilization; 4) bioremediation and 5) thermal desorption.

The FFS identified a number of severe limitations and complex issues associated with the site-wide ex-situ remedial options, including difficulties associated with the large amount of massive construction and demolition debris contained with the Fill Area. These findings are presented in detail in the 1997 Focused Feasibility Investigation Workplan (FFSI). The FFSI established the following working definition for the "hot spot" area:

- an area where, if chemical constituents were removed and/or treated, the site-wide risk would be reduced by over an order of magnitude; and

- an area small enough to be considered separately from remediation of the entire Fill Area.

Based on previous findings, it was determined that sludge in one portion of the Fill Area fit the definition of "hot spot" (see Figure 2). The FFSI also determined that treatability studies were necessary to determine the best in-situ methods to address this Fill Area sludge (i.e., the Hot Spot area). In 1998, the PRPs submitted a Treatability Testing Workplan to test these technologies. The results of the testing were submitted in the July 2000 Treatability Study Final Report.

Additional off-property groundwater and surface water sampling will continue to be conducted in preparation for the development of remedial alternatives for off-property groundwater contamination and Peach Island Creek. Based on the existing information relating to the Fill Area, EPA has elected to move forward with the permanent remedy for OU2 independent of the OU3 remedy, which will be the subject of a future ROD. Thus, the following summary focuses on the OU2 efforts.

SITE CHARACTERISTICS

The results of the RI indicate that the Site stratigraphy consists of the following units, in descending order with depth: earthen fill material (average thickness of approximately 8.4 feet across the Site); peat (thickness ranging from 0 to approximately 1.8 feet across the Site); gray silt (average thickness ranging from 0 to 19 feet across the Site); till (consisting of sand, clay and gravel, average thickness of approximately 20 feet across the Site); and bedrock.

The Site is underlain by three groundwater units which are described as the "shallow aquifer," the "till aquifer" and the “bedrock aquifer” in descending order with depth. The natural water table is found in the shallow aquifer at a depth of approximately two feet below the land surface. The till aquifer consists of the water-bearing unit between the clay and the bedrock. The bedrock aquifer is the most prolific of the three aquifers and is used regionally for potable and industrial purposes. Results of hydrogeologic tests conducted during the RI indicate that the three aquifers are hydraulically connected. Chemical analyses of groundwater from the three aquifers provide further support to this finding. Specifically, chemical data collected during the RI demonstrated that contaminants, including chloroform, 1,2-dichloroethane, and vinyl chloride from the shallow aquifer have migrated across the clay-silt layer into the till and bedrock aquifers.

Physical Characteristics

Test pit and boring investigations conducted during the RI defined the Fill Area. Twenty-three test pits were dug and thirty-one soil borings were taken. In addition, eighteen soil borings were collected around the perimeter of the Site as part of the OU1 slurry wall design investigation. Based on these data, the following conclusions can be drawn.

1. The Fill Area material consists of a variety, of construction and demolition (C&D) debris including large blocks of reinforced concrete and rock, steel beams, timber, stumps, scrap metal, fencing, piping, cable, brick, ceramic, concrete masonry block, rock/concrete rubble, etc. Finer grained materials such as sands, gravels, silts, clays, and sludge-like material were identified mixed within the C&D debris.

2. Based on a review of the Test Pit Study Report and photographs of subsurface material, an estimated 60% of the material is C&D debris and the remaining material consists of finer grained particles mixed with the C&D debris.

Chemical Characteristics

During the RI, numerous chemical constituents were detected in the Fill Area material, including volatile organic compounds (VOCs) such as benzene, tetrachloroethylene and toluene; semi-volatile organic compounds (SVOC) (generally polynuclear aromatic hydrocarbons); a small number of pesticides such as aldrin and dieldrin; polychlorinated biphenyls (PCBs); and metals such as copper and lead.

Sludge Area Investigation

An investigation of a portion of the Fill Area was conducted pursuant to the 1997 FFSI Work Plan and was designed to gather data on the nature and extent of contaminated sludge in the vicinity of one of the RI’s borings, namely boring B-1 (see Figure 2). This sludge area was later determined to meet the definition of a Hot Spot. Therefore, the terms “sludge area” and “Hot Spot” will be used interchangeably through the remainder of this Proposed Plan. The results of the FFSI are presented in the 1997 FFSI Report. In summary, the investigation confirmed the presence of a discrete area of sludge in the eastern portion of the Site with the following characteristics:

- The sludge area is approximately 4,000 square feet in areal extent and consists predominately of sludge material and fine grained soil with little debris. A surficial layer of fill approximately 0.5 to 8 feet thick overlies the sludge and, based on an average thickness of 10 feet the volume of sludge is approximately 1,480 cubic yards.

- The levels of contaminants for the sludge area include the highest VOC (e.g., tetrachloroethylene at 4290 ppm and toluene at 3380 ppm) and PCB (e.g. Arochlor 1242 at >15,000 ppm) concentrations detected anywhere on the SCP property.

WHAT IS A "PRINCIPAL THREAT"?

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (NCP Section 300.430(a)(l)(iii)(A)). The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to ground water, surface water or air, or acts as a source for direct exposure. Contaminated ground water generally is not considered to be a source material; however, Non-Aqueous Phase Liquids (NAPLs) in ground water may be viewed as source material. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur. The decision to treat these wastes is made on a site-specific basis through a detailed analysis of the alternatives using the nine remedy selection criteria This analysis provides a basis for making a statutory finding that the remedy employs treatment as a principal element.

The contaminated soils and sludges in the Fill Area are considered to be“Principal threat wastes” as the chemicals of concern are found at concentrations that pose a potential significant risk. The risk from the sludges in the Hot Spot Area are significantly higher than the remainder of the Site. In addition, the contaminants demonstrated a potential for off-site migration through surface water runoff, prior to placement of the interim cap.

SCOPE AND ROLE OF THE ACTION

As stated previously, EPA plans to address this Site in three operable units, one of which has already been implemented. OU1 provided an interim infiltration barrier, slurry wall, groundwater collection system and off-site treatment and disposal of extracted groundwater. OU2 improves upon and makes permanent the OU1 remedy and therefore addresses the final remedy for the Fill Area. OU3, the final operable unit, will address the contaminated groundwater in the deeper aquifers where contamination extends off-property. OU3 will also address the contaminated sediments in Peach Island Creek.

SUMMARY OF SITE RISKS

WHAT ARE THE "CONTAMINANTS OF CONCERN"?

EPA and NJDEP have identified PCBs, metals, and several organic compounds in soils and the groundwater directly under the Site as chemicals of concern as they pose the greatest potential risk to human health at this Site.

PCBs were found in Fill Area soils at a maximum concentration of 15,100 parts per million (ppm) in surface soil, 400 ppm in soils 4 to 6 feet deep, 1,400 ppm in soils 6-8 feet deep soils and 1,300 ppm in the deeper Fill Area soils. PCBs were also found in the shallow groundwater at a concentration of 17 milligrams per liter (ppm). PCBs are a group of 209 individual chlorinated biphenyl compounds (known as congeners) with varying health effects. PCBs are classified by EPA as probable human carcinogens. Some PCBs also have non-cancer health effects including reduced birth weight and impacts on the immune system.

VOCs were found in the soils and the groundwater within the shallow water table aquifer. Maximum total VOC concentrations in the fill area were 9,000ppm at 2 to 4 feet deep, 29,200ppm at 6 to 8 feet deep and 36,000ppm at 10 to 12 feet deep. The VOCs of concern include: tetrachloroethylene, 1,2-dichloroethane, 1,2-dichloroethylene (trans), methylene chloride; methyl ethyl ketone; trichloroethylene; and vinyl chloride. The VOCs of concern include a number of known human carcinogens (e.g., benzene and vinyl chloride); probable human carcinogens (e.g., chloroform and tetrachloroethylene); possible/probable human carcinogens (e.g. trichloroethylene); and possible human carcinogens (e.g., isophorone). In addition to their carcinogenic potential, these chemicals may also cause non-cancer health effects including impacts on the liver and blood at high doses.

Benzidine, which was found in one sample in the Hot Spot Area at 244.0 ppm, is a solid, previously used in production of dyes. Benzidine is classified by EPA as a known human carcinogen.

Metals found on the Site include arsenic and lead. Arsenic is a known human carcinogen while lead is classified as a probable human carcinogen. Lead has been shown to cause neurotoxicity in children.

Human Health Risks

In 1990, as part of the RI/FS, EPA conducted a baseline risk assessment for the Site to determine the potential current and future effects of contaminants on human health. The Toxicity data and risk assessment were updated in July 2000. The Site is zoned for industrial use and the exposure assessment reflects this land use.

Since the original risk assessment was conducted in 1990, there has been an interim remedy constructed to eliminate direct contact with contaminated soil and potential releases of contaminated soil into the air and to contain contaminated groundwater in the Fill Area, thereby reducing potential cancer risks and non-cancer health hazards. The updated baseline risk assessment of July 2000 focused on health effects from exposure in the absence of the interim remedy and assuming the potential use of the shallow aquifer for drinking water consumption. This approach, therefore, may overestimate risks based on the current interim remedy already in place and the fact that groundwater from the shallow aquifer is not currently used for any drinking water purpose. In accordance with EPA's policies, based on the classification of the shallow groundwater by NJDEP as a potable drinking water source, an assessment of potential use of the shallow groundwater was performed to determine the extent of risks posed by this groundwater if no remedial action was taken.

WHAT IS RISK AND HOW IS IT CALCULATED?

A Superfund human health risk assessment estimates the "baseline risk." This is an estimate of the likelihood of a health problem occurring if no clean up actions were taken at a site. To estimate this baseline risk at a Superfund site, a four-step process is utilized for assessing site-related human health risks for reasonable maximum exposure (RME) scenarios and central tendency exposure (CT) scenarios.

Data Collection and Evaluation/Hazard/Identification: In this step, the data which have been gathered at the site are assessed, and the contaminants of concern at the site are identified based on several factors such as toxicity, frequency of occurrence, and concentration of contamination in various media.

Exposure Assessment: Under this step, the different ways that people might be exposed to the contaminants identified in the previous step, such as ingestion of contaminated soil or groundwater, inhalation of contaminated air, and ingestion of contaminated fish, are identified. Also, the concentrations to which people might be exposed, and the potential frequency and duration of exposure are considered. Using this information, the "reasonable maximum exposure" scenario, which identifies the highest level of human exposure that could reasonably be expected to occur, and the "central tendency" scenario, which represents the average human exposure, are evaluated.

Toxicity Assessment: The toxicity assessment determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response). Two distinct types of health effects are considered, carcinogenic effects, and non-carcinogenic, or systemic, effects.

Risk Characterization: This step summarizes and combines the results of the exposure and toxicity assessments to provide a quantitative assessment of site risks. Two types of risk--cancer risk and non-cancer hazards are evaluated. The likelihood of any kind of cancer resulting from a site is expressed as a probability. For example, a 10^{-4} cancer risk means that one additional person *may* develop cancer within a population of 10,000 people exposed under conditions identified in the exposure assessment. Superfund law states that acceptable exposures are an individual lifetime excess carcinogenic risk in the range of 10^{-6} to 10^{-4} (corresponding to a one-in-one-million to a one-in-ten-thousand excess lifetime risk of developing cancer). For non-cancer health effects, a "hazard index" (HI) is calculated which looks at exposure to multiple chemicals through multiple exposure pathways (such as ingestion of *and* dermal contact with contaminated soils). The key concept here is that a "threshold level" (measured as an HI of less than 1)

The cancer risks and non-cancer hazards were evaluated for future adult on-site workers; future construction workers; future adolescent trespassers; further off-site workers; and future adult and child off-site residents. It should be noted that the nearest off-site resident is currently over one mile from the Site. The potential exposure pathways evaluated included: ingestion and dermal contact with contaminated surface and subsurface soils; inhalation of volatilized contaminants and dust, and ingestion of shallow groundwater.

There are numerous chemical contaminants present in the Site soils. To determine which chemicals were of concern at the Site for purposes of the risk assessment, each chemical detected was compared against criteria that included potential toxicity, and frequency of detection. The chemicals of concern were found to be associated with the recycling of industrial wastes during the 1970's and early 1980's. The above contaminants of concern found at the Site are evaluated in the risk assessment. For known or suspected carcinogens, EPA has established an acceptable cancer risk range of one-in-a-million (1 x 10E-6) to one-in-ten-thousand (1 x 10E-4). Action is generally warranted when excess lifetime cancer risk exceeds one-in-ten-thousand. In other words, for every 10,000 people that could be exposed, one extra cancer may occur as a result of exposure to site contaminants. An extra cancer case means that one more person could develop cancer than would normally be expected. NJDEP's acceptable risk level is 1x10E-6.

EPA's guidance for evaluating risk from exposure to carcinogenic chemicals provides a framework for assessing carcinogenic risks. This process includes estimating the potential risk throughout an entire exposure period of 250 days/year for 25 years for the workers who may be exposed through incidental ingestion, dermal contact, and inhalation of contaminants. EPA used standard default assumptions including that individuals would be exposed to the maximum detected concentration of each contaminant in the absence of the current interim remedy at the Site. EPA's risk analysis indicates that the total cancer risks to the reasonably maximally exposed individual are 1.5 x l0E-2 with the primary risks associated with exposure to PCBs for 250 days/year for a period of 25 years. The cancer risks for the average exposure is approximately 4 x 10E-3 based on an exposure period of 220 days/year for 6.6 years. Both risks are greater than EPA's acceptable risk range and are primarily due to exposures to Hot Spot Area PCBs.

For the future construction worker, who would be exposed for a significantly shorter period of time (i.e., 180 days for 1 year) while digging in the contaminated soils at a depth of 5 to 6 feet, the cancer risks for the reasonably maximally exposed individual are approximately 2.8 x 10E-3. This is above EPA's acceptable risk range. The risks are primarily the result of exposure to benzidine, and PCBs found in the Hot Spot Area. The risks to the reasonably maximally exposed individual exposed to the deep and very deep soils at the Site are approximately 8.0 x 10E-6 and 2.5 x 10E-6, which are within EPA's acceptable risk range.

For a future adolescent who may come into contact with the contaminated soils while trespassing at the Site, the risks were approximately 2.0 x 10E-3 for the reasonably maximally exposed individual and 5.0 X 10E-4 for the average exposure. Consistent with EPA's regulations, this assessment does not take into account the interim remedy which is in place at the Site. Again, the potential risks are primarily the result of exposure to Hot Spot Area PCBs.

For a future site worker, in the highly unlikely event that the shallow aquifer was used as a drinking water supply for on-site workers, the cancer risks are approximately 4.0 x 10E-1. The primary chemicals contributing to this unacceptable risk are: chloroform, 1,2-dichloroethane, 1,1,2,2-tetrachloroethane, tetrachloroethylene, methylene chloride, trichloroethylene, vinyl chloride, total PCBs, and arsenic.

Risks to off-site workers potentially exposed through inhalation of wind eroded soil and volatilized chemicals, not considering the interim remedy that is in place at the Site, are approximately 2.0 x 10E-6 which is within EPA's acceptable risk range. An analysis of risks to off-site residents exposed through inhalation of wind eroded soil and volatilized chemicals in the future, assuming that the interim remedy was not in place, were found to be below 1.0 x 10E-6 and therefore within EPA's acceptable risk range.

The risk assessment also evaluated non-cancer health effects to the same populations evaluated during the cancer assessment above. Once again, EPA used standard default assumptions and followed regulations which assume that individuals would be exposed in the absence of the current interim remedy at the Site, and to the maximum detected concentration of each contaminant. The non-cancer assessments are based on current reasonable maximum exposure scenarios and were developed taking into account various assumptions about the frequency and duration of an individuals exposure to the subsurface and surface soils as well as the toxicity of the contaminants of concern. For the non-cancer assessment, the exposure dose is compared to a Reference Dose that is designed to be protective of the general population including adults and children. The exceedence of a Hazard Quotient of 1 indicates an increased level of concern.

For the on-site worker, assuming the current interim remedy to reduce exposure was not in place, the Hazard Index (HI) for the reasonably maximally exposed individual exposed through incidental ingestion and dermal exposure is 310. This is based on non-cancer hazards from PCBs. The HI for the average exposed individual is 110 and this is based on the total Hazard Index from PCBs.

For the future construction worker exposed to the subsurface soils (at 5 to 6 foot depth), the non-cancer HI is 32 for the reasonably maximally exposed individual. The primary contaminant of concern is PCBs. At greater depths, the HI is less than 1.

For the future trespasser exposed to surface soils in the absence of the current on-site interim remedy, the HI is 234 based on PCBs.

For the future on-site worker who may be exposed to the shallow groundwater through ingestion, the HI is 4,800 for the reasonably maximally exposed individual and 3,000 for the central tendency or average exposed individual. This hazard assessment assumes that the shallow groundwater would be used as a drinking water supply although it is highly unlikely that this section of the aquifer would support this activity based on yield, but it was evaluated consistent with EPA's guidance. The primary chemicals contributing to this risk are the volatile organic chemicals including benzene, chloroform, 1,2-dichloroethane, vinyl chloride, nitrobenzene, 1,2-dichloroethylene (trans), tetrachloroethylene, methylene chloride, methyl ethyl ketone, and trichloroethylene. Arsenic also contributed to the hazard, however, the most significant single contributor to the total hazard was PCBs (HI = 2,400) in the Hot Spot Area.

It is EPA's, as the lead agency, current judgment that the Preferred Alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan,

SUMMARY OF SOIL REMEDIAL ALTERNATIVES

Medium	Source Control Alternatives	Description
SOIL	**SC-1**	**No Action**
	SC-2	**Excavation/Ex-situ Treatment/Disposal of Fill Area Soils**
	SC-3	**Excavation of Hot Spot Area, Capping, and Shallow Groundwater Collection**
	SC-4	**In-Situ Thermal Desorption of Hot Spot Capping and Shallow Groundwater Collection.**
	SC-5	**Air Stripping, Solidification/Stabilization of Hot Spot, Capping and Shallow Groundwater Collection.**

is necessary to provide permanent protection of public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

Ecological Risks:

An ecological risk assessment was determined to be unnecessary for the on-site remedy. Thus, the potential ecological risks will be addressed as part of OU3.

REMEDIAL ACTION OBJECTIVES

The following remedial action objectives address the human health risks and environmental concerns posed by the SCP Fill Area by:

- Mitigating direct contact risk and leaching of contaminants from soil, fill material and sludge into the ground water;

- Reducing the toxicity and mobility of the Hot Spot contaminants via treatment;

- Providing hydraulic control of the shallow aquifer by maintaining groundwater levels within the slurry wall below the corresponding levels in piezometers outside the slurry wall, and extracting and treating the shallow groundwater; and

- Performing remediation in such a manner that allows site re-use for commercial purposes.

SUMMARY OF REMEDIAL ALTERNATIVES

Remedial alternatives for the soils are presented below. Because all of the alternatives may result in contaminants remaining on the Site at levels above those that would allow for unrestricted use, five-year reviews will be required in perpetuity. In addition, all of the alternatives will require some form of institutional controls (e.g., deed notice) because none of the alternatives will allow the site to be used for residential purposes. Some of the alternatives may also require limitations on the type of intrusive activities that can be conducted on-site. The timeframes below for construction do not include the time for remedial design or the time to procure contracts.

Alternative SC-1: No Action

Estimated Capital Cost	$0
Estimated Annual O&M Cost	$0
Estimated Present Worth Cost	$0
Estimated Construction Timeframe	None

Regulations governing the Superfund program require that the "no action" alternative be evaluated generally to establish a baseline for comparison. Under this alternative, EPA would take no action at the Site to prevent exposure to the soil contamination. The contaminated soil would be left in place without treatment. As the interim remedy was not designed to be permanent, EPA expects that it would eventually fail. This could allow on-site exposure as well as an increased possibility that additional contamination would migrate from the Fill Area.

Alternative SC-2: Excavation/Ex-situ Treatment/Disposal

Estimated Capital Cost	$91 million
Estimated Annual O&M Cost	$100,000
Estimated Present Worth Cost	$94 million
Estimated Construction Timeframe	2 years

All the contaminated soil, sludge and debris in the entire Fill Area would be removed and sent off-site for treatment or disposal. The mix of large debris and soil found in the fill area would be separated by size and composition and stockpiled on-site. Extensive dewatering activities would be conducted prior to and during any excavation activities. A sheet pile wall would be installed around the entire Fill Area to allow the excavation and removal of the majority of Fill Area debris and soil while protecting the existing slurry wall. Control of VOC vapor and dust, as well as air monitoring would need to be provided as would control of run-off due to precipitation. The Fill Area would be backfilled with clean fill and regraded. As all contaminated soils, sludges and debris would be excavated and contaminated groundwater pumped out during the dewatering process, neither the existing nor additional containment measures would be necessary.

Alternative SC-3: Excavation of Hot Spot Area, Capping, and Shallow Groundwater Collection

Estimated Capital Cost	$13.9 million
Estimated Annual O&M Cost	$180,000
Estimated Present Worth Cost	$16.7 million
Estimated Construction Timeframe	13 Months

The Hot Spot area sludge would be excavated and sent off-site for treatment (incineration) and disposal. Dewatering activities would be conducted prior to and during the excavation activity with off-site treatment and disposal of the groundwater. A braced excavation using sheet piles supported by at least two levels of internal bracing would be required to provide a stable excavation and to protect the integrity of the existing slurry wall, which is within 10 feet of the sludge at some locations. In order to provide a stable excavation and limit emissions, the sludge area would need to be excavated in multiple "cells" rather than a single large excavation. Each

cell would be backfilled with imported clean fill before excavating the adjoining cell. During excavation, VOC and dust emissions, and odor would need to be controlled to protect nearby off-site receptors and the general public. To achieve the necessary control, excavation activities would likely need to be completed within a fully enclosed structure so that all VOC and dust emissions could be collected and treated prior to discharging to the atmosphere.

The cap will consist of a 2-foot thick "double containment" cover system, which will be constructed over the entire area currently circumscribed by the existing slurry wall. The cover system will provide flexibility for the potential end-use of the site for commercial purposes.

In order that hydraulic control within the existing slurry wall is maintained, the existing, interim groundwater recovery system, which consists of above ground piping, seven wells screened in the Fill Area which discharge to a 10,000 gallon on site holding tank, would be improved. The improvements would include the installation of new extraction wells along the perimeter of the Site, construction of underground clean utility corridors for the wells, and piping and electrical system to allow more flexibility for future uses of the Site. A geotextile would be placed within the utility corridor to separate Fill Area soils from clean soils within the utility corridors. The extracted groundwater would either be collected in the existing 10,000 gallon above-ground tank for disposal via tanker truck at a commercial facility, or pumped, via sewer connection, to the Bergen County Publicly Owned Treatment Works (POTW) for treatment.

Currently, a sheet pile wall along Peach Island Creek protects the slurry wall along the riparian side of the Fill Area. Improvements would be made to the sheet pile wall which could include the installation of slope stabilization material such as rip-rap and the geomembrane portion of the cover would be extended down the graded and protected slope. The existing slurry wall would remain in place.

The slurry wall includes a double containment system consisting of a soil-bentonite slurry barrier and a geomembrane barrier. The slurry wall is keyed into the natural clay layer underlying the Fill Area. For this alternative, as well as Alternatives SC-4 and SC-5, the effectiveness of the slurry wall would continue to be monitored by shallow groundwater wells outside the slurry wall.

Alternative SC-4 In-Situ Thermal Desorption, Capping, and Shallow Groundwater Collection

Estimated Capital Cost	$ 4.7 million
Estimated Annual O&M Cost	$180,000
Estimated Present Worth Cost	$ 7.5 million
Estimated Construction Timeframe	1 year

In-situ thermal desorption of the Hot Spot Area could be achieved via installation of thermal wells, consisting of a perforated outer steel casing and interior heating element in a closely spaced pattern throughout the area. A heat resistant silica blanket would be placed over the area forming a seal to minimize losses of VOCs and steam, as well as to reduce intrusion of atmospheric air. The wells and an approximately 6-inch wide concentric halo would be heated to 1,400° F. Heat propagating throughout the area would first vaporize moisture, and then increase sludge temperatures to around 450°F (sufficiently high to cause PCBs to desorb from the soil). A modest vacuum (3 to 5 inches water) would be applied to each well in the system to remove vapors. Extracted vapors would be treated by an indirect fired thermal oxidizer at ground surface followed by a heat exchanger and a vapor phase activated carbon (VPAC) system.

A description of the capping and groundwater collection that would be performed for this alternative can be found in the description of alternative SC-3.

Alternative SC-5: Air Stripping, Capping, Solidification/ Stabilization and Shallow Groundwater Collection.

Estimated Capital Cost	$ 4.7 million
Estimated Annual O&M Cost	$180,000
Estimated Present Worth Cost	$ 7.5 million
Estimated Construction Timeframe	One Year

For this alternative, the key elements of the existing interim remedy would be improved and made permanent. In addition, in-situ (i.e., in place) treatment followed by solidification/stabilization of the Hot Spot Area would be performed.

The Hot Spot Area would first be treated, in-situ, via air stripping, which in this case would be effected by aerating the Hot Spot Area with augers or paddles. During operation of the selected air stripping method, small shrouds will be placed directly over the augers or paddles and negative pressure would be maintained within the shroud to capture the VOCs released during mixing. VOCs released from the Hot Spot Material would be treated using vapor phase activated carbon, a catalytic oxidizer or other appropriate technologies. Cement and lime, which the treatability studies showed to be effective in stabilizing the PCBs and VOCs, would be used as the solidification and stabilization agent. Treatment is expected to extend at least two feet below the natural ground surface, which would be 10-18 feet below existing ground surface.

This action would be followed by capping and groundwater collection as described in Alternative SC-3.

EVALUATION OF ALTERNATIVES

Nine criteria are used to evaluate the different remediation alternatives individually and against one another in order to select the best alternative. This section of the Proposed Plan profiles the relative performance of each alternative against the nine criteria, noting how it compares to the other options under consideration. The nine evaluation criteria are discussed below. A more detailed analysis of the presented alternatives can be found in the FFS.

1. Overall Protection of Human Health and the Environment

All of the alternatives except the "no action" alternative would provide adequate protection of human health and the environment by eliminating, reducing, or controlling risk through treatment engineering controls, and/or institutional controls. Alternatives SC-5 and SC-4 would afford protection by treating and stabilizing the most highly-contaminated area, (i.e., the Hot Spot Area). Alternative SC-3 would provide protection by removing the most highly-contaminated area for off-site treatment or disposal. Alternatives SC-3, SC-4 and SC-5 would all provide additional protection by preventing direct contact exposure with contaminated soils and preventing the spread of contaminants to outside the Fill Area by containing the area with a slurry wall, cap, and groundwater collection system. Alternative SC-2 would remove for disposal or treatment the majority of the contaminated material in the entire Fill Area, thereby removing unacceptable risks once the cleanup is complete.

2. Compliance with ARARs

Actions taken at any Superfund site must meet all applicable or relevant and appropriate requirements (ARARs) of federal and state law, or provide grounds for invoking a waiver of these requirements. These include chemical-specific, location specific and action-specific ARARs.

Soils

There are no chemical-specific ARARs for the contaminated soils. If SC-2 is selected, risk-based cleanup goals for the Fill Area would be developed using the New Jersey Soil Clean-up Criteria (NJSCC) which are To Be Considered (TBC) criteria as opposed to promulgated standards. There are three types of NJSCC, Residential Direct Contact (RDSCC), Non-Residential Direct Contact (NRDCSCC), and Impact to Groundwater (IGWSCC). Since the Site is located in a non-residential/commercial area the more stringent of the NRDCSCC or the IGWSCC would be used to develop soil clean-up goals.

EVALUATION CRITERIA FOR SUPERFUND REMEDIAL ALTERNATIVES
Overall Protectiveness of Human Health and the Environment determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.
Compliance with ARARs evaluates whether the alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.
Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.
Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
Short-term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.
Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
Cost includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.
State Support Agency Acceptance considers whether the State agrees with the EPA's analyses and recommendations, as described in the RI/FS and the Proposed Plan.

Alternatives SC-3, SC-4 and SC-5, while not remediating or removing Fill Area soils outside the Hot Spot Area, would greatly (by over an order of magnitude) reduce the risk levels posed by the Fill Area soils, through treatment or removal of the most contaminated area. In addition, Alternatives SC-3, SC-4 and SC-5 would, through containment monitoring and institutional controls, mitigate the potential risks from the Site and therefore comply with NJSCC.

All the alternatives will comply with the substantive New Jersey's Technical Requirements for Site Remediation, N.J.A.C. 7:26E *et. seq.,* the New Jersey Brownfield and Contaminated Site Remediation Act, N.J.A.C. 58:10B and any relevant local requirements including the Hackensack Meadowlands Development Commission regulations.

The Resource Conservation and Recovery Act (RCRA) is a federal law that mandates procedures for treating, transporting, storing and disposing of hazardous substances. All portions of RCRA that were applicable or relevant and appropriate to the proposed remedy for the Site would be met by Alternatives SC-2 through SC-5.

Groundwater

Alternatives SC-3, SC-4 and SC-5 require that groundwater within the Fill Area be pumped and sent off-site, which in combination with the slurry wall and natural clay layer would prevent the spread of contaminants to the surrounding areas or surface water thereby preventing any direct exposure to contaminated water. Therefore, these remedies will not contravene Surface Water Quality Standards (NJAC 7:9B) or Ground Water Quality Standards (NJAC 7:9-6) outside the Fill Area. In addition, since the Groundwater Quality Standards will not be met within the Fill Area, a Classification Exception Area (CEA) would need to be established for any of the Alternatives.

3. Long-term Effectiveness and Permanence

Alternative SC-1 would provide no long-term effectiveness and permanence in the prevention of direct contact to or spread of Fill Area contamination. Alternatives SC-3, SC-4 and SC-5 are all effective in the long-term as they would reduce potential risks due to ingestion and dermal contact pathways and minimize any potential of contamination impacting groundwater outside the Fill Area. However the cap, slurry wall, groundwater pumping system and monitoring wells would require regular inspection and maintenance to ensure the integrity of the remedy over the long-term. Alternative SC-2 would not require long term control as soils above risk-based cleanup levels would be removed from the Site.

4. Reduction of Toxicity, Mobility or Volume of Contaminants Through Treatment

Alternatives SC-4 and SC-5 would reduce the concentration as well as the toxicity and mobility of a large percentage of the contaminants in the Fill Area through treatment of the to highly-contaminated Hot Spot Area. SC-5 would also stabilize any remaining contamination in the Hot Spot Area, but would increase the volume of the Hot Spot Area by approximately 10% through the addition of stabilizing substances. SC-3 would reduce the toxicity, mobility and volume and toxicity of the contaminants in the Fill Area through direct removal of the entire Hot Spot Area. For SC-3, SC-4 and SC-5, mobility would be reduced over the whole Fill Area through installation of a permanent cap. Alternative SC-2 would offer the greatest reduction in toxicity, mobility and volume of contaminants compared to the other alternatives by removing material for off-site treatment or disposal, thereby eliminating unacceptable risks on-site.

5. Short-term Effectiveness

All the remedial alternatives would involve some Site disturbance and thus present the potential for short-term challenges. SC-3 may require construction of a large tent over a portion of the site to ensure that the high concentration of VOCs that exist on-site are not released into the air during the excavation activities. Regardless, implementation of SC-3, even with available controls in place, could cause significant health risks to workers, off-site receptors and the public. SC-4 would require the installation and operation of high temperature thermal elements and would also allow for the potential of VOC releases, Hydrogen Chloride (HCl) production and fouling due to the destruction of oil-based products. The effectiveness of this action is uncertain due not only to the presence of oil in the Hot Spot Area, but also the very high water content in this area. SC-5 would require control of VOC release during the air stripping remedial action through the use of small shrouds. SC-3, SC-4 and SC-5 would use the capping/slurry wall/groundwater collection methods to contain the wastes in the Fill Area. These methods have been shown to be effective during 8 years of operation for the interim remedy. Alternative SC-2 would require the most excavation, and would also require extensive stockpiling and separation of the on-site soil and debris. Implementation of SC-2 and SC-3 would require additional truck traffic in the industrial area around the Site, which would have to be coordinated as to lessen the impacts to normal area traffic.

6. Implementability

Implementation of Alternative SC-2 would require surmounting many technical and potential human exposure problems. Approximately 99% of the VOC and dust emissions would have to be controlled in order to protect against a potential “worst-case” off-site human exposure scenario. This would likely require excavation and material handling activities for the entire Site to be conducted within an enclosed structure. Emission from the enclosure may require treatment prior to being discharged to the atmosphere. In addition, the large and varied amount of soil and debris found in the Fill Area, including wood, plastic, metal, cement, saturated and unsaturated soils etc., would require extensive manual labor to separate and would require a large number of on-site stock piles in a relatively small area.

Alternatives SC-3, SC-4 and SC-5 would improve and make permanent the existing interim remedy. A new slurry wall would not need to be constructed, however, a new cap, stream bank stabilization along Peach Island Creek, piping for groundwater collection, and additional monitoring wells would be constructed or installed. The methods for this work are well known and equipment is readily available.

Implementation of Alternative SC-3 would entail significant challenges. Construction risks, due to the instability of the sludge area soils, and the risk of contaminant migration during construction activities are significant. Also, significant effort would be needed to prevent escape of VOCs during the excavation and there would be added risk associated with transporting the sludge to the nearest available treatment and disposal facilities. Additionally, limitations on the rate of acceptance of the sludge at a disposal area could significantly impede the progress of this remedial action.

Implementation of SC-4 could be problematic due to the high moisture content of the sludge. This could lead to extended treatment times since virtually all moisture must be vaporized before sludge temperatures increase and allow contaminant desorption. Calculations indicated that large quantifies of HCl would be generated, giving rise to concerns that HCl could react with metals forming more soluble compounds (salts) that would be more mobile than the metal compounds which currently exist at the Site. In addition, the high concentrations of petroleum-based oils could cause repeated fouling of the thermal system which in turn would reduce the overall efficiency of the wells to extract vapors and control potential releases at the surface.

The Alternative SC-5 treatment process using air stripping and stabilization/solidification are relatively well known technologies. This treatment proved effective during treatability studies using sludge from the Hot Spot Area, where concentrations of VOCs were reduced by 90% and mobilization of PCBs and VOCs were reduced by over 95%. The potential of VOC release during aeration and spread of the contaminants during implementation of this alternative is far less than for either Alternative SC-3 and SC-2. Nevertheless, these risks would need to be addressed during the remedial action.

7. Cost

The estimated present worth cost of SC-2 is significantly more than SC-3. And SC-3 is approximately twice SC-4 or SC-5. The costs for the latter two alternatives are comparable as are the implementation timeframes.

8. State/Support Agency Acceptance

The State of New Jersey agrees with the preferred alternative in this Proposed Plan.

9. Community Acceptance

Community acceptance of the preferred alternative will be evaluated after the public comment period ends and will be described in the ROD for the Site.

SUMMARY OF THE PREFERRED ALTERNATIVE

The Preferred Alternative for cleaning up the Fill Area at the SCP Site in Carldstadt, New Jersey is Alternative SC-5 (Air Stripping, Capping, Solidification/Stabilization and Shallow Groundwater Collection), hereafter referred to as the Preferred Alternative. While EPA believes the Hot Spot treatment described in SC-5 will be effective, as in any remedial action, if appropriate performance standards for treatment, solidification and containment are not met then removal of the Hot Spot as described in SC-3, will be performed.

The Preferred Alternative was selected over the other alternatives since it is readily implementable, and it is expected to achieve reduction in the VOC concentration and stabilization and containment of the inorganic and PCB contamination in the most highly-contaminated area (i.e., the Hot Spot). In addition, containment, which is the key element of the Preferred Alternative, improves on the interim remedy to make it viable on a long-term basis to reduce the potential of risk from contaminants that will remain in the Fill Area. The containment measures implemented in the interim remedy have proved effective during the remedy's entire eight years of operation. The Preferred Alternative greatly reduces the potential existing risk through treatment of the most highly-contaminated area, while improving on the existing effective remedy for soils and groundwater currently in place.

Based on the information available at this time, EPA and NJDEP believe the Preferred Alternative would be protective of human health and the environment, would be cost effective, and would use permeant solutions and alternative treatment technologies to the maximum extent practicable. Because it would treat the portion of the source material constituting principal threats, the preferred alternative meets the statutory preference for the selection of a remedy that involves treatment as a principal element. The preferred alternative may change in response to public comment or new information.

COMMUNITY PARTICIPATION

EPA and NJDEP provide information regarding cleanup of the SCP Site to the public through public meetings, the Administrative Record File for the Site and the announcements published in the Star Ledger New Jersey newspaper. EPA and NJDEP encourage the public to gain a more comprehensive understanding of the site and the Superfund activities that have been conducted at the Site.

The dates for the public comment period; the date, location, and time of the public meeting, and the locations of the Administrative Record files, are provided on the front page of this Proposed Plan

For further information on the SCP site, please contact:

Jon Gorin Remedial Project Manager (212) 637-4361	Pat Seppi Community Relations Coordinator (212) 637-3679

gorin.jonathan@epamail.epa.gov

U.S. EPA
290 Broadway 19^{th} Floor.
New York, New York 10007-1866

ATTACHMENT B
PUBLIC NOTICE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

announces

PROPOSED REMEDIAL ALTERNATIVES for the Scientific Chemical Processing Superfund Site Carlstadt, New Jersey

The U.S. Environmental Protection Agency (EPA) in cooperation with the New Jersey Department of Environmental Protection recently completed a Proposed Plan that evaluates remedial alternatives for the Scientific Chemical Processing (SCP) Superfund site in Carlstadt, New Jersey. The Proposed Plan is offered to inform the public of EPA's preferred remedy and to solicit public comments pertaining to all of the alternatives evaluated, as well as the preferred alternative.

EPA will consider written and oral comments on the proposed alternatives before selecting a final remedy. All comments must be received on or before September 15, 2001. The final decision document will include a summary of public comments and EPA responses.

EPA will hold an informational public meeting on **Thursday, August 23, 2001 at 7:00 p.m. at the Carlstadt Municipal Building, 500 Madison Street, Carlstadt, NJ.** At the meeting, EPA will discuss the Proposed Plan, including the preferred alternative.

The Proposed Plan evaluates five remedial alternatives for addressing the contamination associated with soils on the site. These alternatives are:

- **SC1. No Action**
- **SC2. Excavation/Ex-situ treatment/Disposal**
- **SC3 Excavation of Hot Spot Area/Capping, and Shallow Groundwater Collection**
- **SC4. In-Situ Thermal Desorption, Capping and Shallow Groundwater Collection**
- **SC5. Air Stripping, Solidification/Stabilization, Capping and Shallow Groundwater Collection**

EPA recommends Alternative SC5 since it would be protective of human health and the environment, would be cost effective, and would use permanent solutions and alternative treatment technologies to the maximum extent practicable. Because it would treat the portion of the source material constituting principle threats, the preferred alternative meets the statutory preference for the selection of a remedy that involves treatment as a principle element.

The Proposed Plan, Remedial Investigation and Feasibility Study, and all other site related documents are available for review at the William E. Dermody Free Public Library, 420 Hackensack Street, Carlstadt, New Jersey. The phone number for the library is (201) 438-8866.

Written comments on the proposed alternative, as well as any of the alternatives considered should be sent to Mr. Jonathan Gorin, Project Manager, U.S. Environmental Protection Agency, 290 Broadway, 19th Floor, NY, NY 10007. Written comments must be received at the above address on or before September 15, 2001.

L-8 THE RECORD

U.S. ENVIRONMENTAL PROTECTION AGENCY REGION II INVITES PUBLIC COMMENT

Proposed Cleanup to the Scientific Chemical Processing Superfund Site Carlstadt, Bergen County, New Jersey

The United States Environmental Protection Agency (EPA) announces an extension of the public comment for the Proposed Plan for the Scientific Chemical Processing Site's (the Site) second operable unit. The comment period now ends on October 25, 2001. As part of the public comment period, EPA held a public meeting on August 23, 2001 7:00 p.m., in the Carlstadt Borough Hall, Carlstadt, NJ.

The Site's proposed Plan identifies a Preferred Alternative for the final remedy for the contaminated soil on the Scientific Chemical Processing Site. In addition, this Plan includes summaries of the other alternatives evaluated for use at this Site. The preferred alternative calls for improving and making permanent the key elements of the Site's existing interim remedy. In addition, in-situ (i.e., in place) treatment followed by in-situ solidification/stabilization of the Hot Spot Area would be performed. Finally, institutional controls in the form of deed notices will be established in order to ensure long term protectiveness of the containment system.

A copy of the Proposed Plan and the Site's Administrative Record can be found at the William E Dermondy Free Public Library, 420 Hackensack St, Carlstadt, NJ or the US EPA Records Center, 290 Broadway New York, NY.

Before selecting a final remedy, EPA and the New Jersey Department of Environmental Protection will consider all written and oral comments on this preferred remedy. All comments must be received on or before October 25, 2001. The final decision document, or Record of Decision, will include a summary of public comments and EPA's responses.

The public may submit written comments through October 25, 2001 to:

Jon Gorin
Remedial Project Manager
U.S. Environmental Protection Agency
290 Broadway, 19th Floor
New York, New York 10007-1866

ATTACHMENT C
PUBLIC MEETING TRANSCRIPTS

STATE OF NEW JERSEY

IN THE MATTER OF THE
SCIENTIFIC CHEMICAL PROCESSING
SUPERFUND SITE'S PROPOSED PLAN for
OPERABLE UNIT 2

Public Meeting
August 23, 2001
7:20 p.m.
Carlstadt Borough Hall
500 Main Street
Carlstadt, NJ 10027

SILVER REPORTING SERVICES, INC.
634 ARENA DRIVE, SUITE 206
TRENTON, NJ 08610
(609) 888-0111 or (800) 722-7223 (TOLL FREE)

<u>EPA PANEL:</u>

Pat Seppi, Moderator, Community Involvement
Coordinator

John Gorin, Site Project Manager

Stephen Finn, Facility Coordinator,
Golder Associates

Kim O'Connell, Section Chief of the
Superfund Program

Marian Olsen, Human Health Risk Assessor

<u>COUNCIL OF CARLSTADT:</u>

William Roseman, Mayor

Paul G. Rizzo, Councilman

Robert J. Simmermann, Councilman

Joseph T. Crifasai, Councilman

Craig Lahullier, Councilman

Paul J. Occhiuzzo, Councilman

Jane Fontana, Business Administrator

Claire Foy, Borough Clerk

John J. Fahy, Esq., Borough Attorney

PUBLIC MEETING

MS. SEPPI: Why don't we get started. I appreciate you being here on time, and if anyone comes in, I'm sure we can catch them up as we go along.

My name is Pat Seppi. I'm community involvement coordinator for the Chemical Scientific Processing site, and I would also like the people who are here with us tonight to stand up and introduce themselves and tell you how they are involved in this site also.

MR. GORIN: I'm John Gorin. I'm EPA project manager for the site.

MS. O'CONNELL: Kim O'Connell. I'm a section chief of the SuperFund Program work on the site.

MS. OLSEN: I'm Marian Olsen. I'm the human health risk assessor for the site.

MR. FINN: Stephen Finn. I'm with the firm of Golder Associates. We are consultants for the responsible pary group for the cleanup of the site.

MS. SEPPI: And, Jane, is there anyone here you would like to introduce from the town?

MS. FONTANA: I would like to introduce Mayor Roseman, Councilman Craig Lahullier and Councilman Robert Simmermann, and I’m Jane Fontana, the town administrator.

MS. SEPPI: The reason we are here tonight is to share our proposed plan for the final cleanup for the site, and I hope that everybody either has gotten a copy or took a copy from outside.

The EPA has identified the alternative that we prefer, but before we make that decision in a final legally binding document, we have a public comment period of 30 days.

Now, the public comment period is scheduled to close on September 13th. So any comments we hear tonight, we will put that in the public record here. That’s why we have Michael here. He is a stenographer. So all your comments will be duly noted. But if you think of anything else tonight, you can certainly write your comments to John Gorin on the address of the plan, but we ask that you do that by the close of business on September 13th.

We have just a couple of short presentations tonight. We don’t want to keep you here too long, and then we will certainly open up the floor to you for questions.

If you haven’t signed in, I would appreciate if you did that so we can add you to the mailing list.

As I said, the copies of the proposed plan are out there. If you do come up, if you have questions and comments, if you state your name first so Michael will be able to get that for the record.

I asked Michael not to stop if there is a word that he didn’t get, or a comment, or question, or anything.

So I think right now I will turn this over to John and his presentation.

MR. GORIN: I’m just going to do two things tonight on the agenda. I’m first going to tell you a little bit about the Superfund program itself, how it works, and the second part I’m going to go into a little bit of background and site history. A lot of questions might come up when I am going through the background of the site and site history and what happened.

I believe Steve Finn, who is going to go after me, who is in charge of the actual cleanup, will maybe answer those questions, so you might want to wait until after he's done. And if he didn't answer your question, you can deal with it then.

How the Superfund program works, well, first, site discovery. We find--someone identifies the EPA of an abandoned site or controlled site and that's when the process begins.

The next step is the preliminary assessment, when the EPA, and usually the state, review all existing information on the site to see if any other work has to be done. The decision is made if additional work has to be done.

We do a site inspection, which is where we actually go and collect site data. Based on that information, the accumulated information during the assessment and the additional information collected during the inspection, we give the site a hazard rank.

Based on the hazard rank, we make a decision whether it will be placed on the NPL list, which is the National Priority List, or not. If it comes out on the National Priority List, that's basically a Superfund list, all those sites on that list are the Superfund sites and it was what the EPA considers the most uncontrolled abandoned sites in the nation. And for all those sites a decision has to be made what further action there should be, if anything.

The next step is to do a remedial investigation and feasibility study. These are generally done together. And this is also when we all look for something called the PRP, which is the Potentially Responsible Party, or parties. And they are the ones that we feel are responsible for the cleanup because they are responsible for the pollution.

And if we find those responsible parties, generally what we try to do is get them involved, offer them a chance to do a remedial investigation, or sometimes force them legally to do an investigation and feasibility study.

If we don't find them, the EPA does it and it is paid for by the fund. And if later on we do find the PRPs, we go after them for those costs in terms of those that occurred during the remedial investigation and feasibility study.

The remedial investigation, basically you just look at a site and, in essence, the contamination. It is kind of the next step after the science inspection. We will kind of get a better idea of what is going on and we begin establishing criteria for cleaning up the site.

The feasibility study is simply a way to identify the best technical alternatives to clean up the site, to meet those criteria, and then we do a detailed analysis of the costs and the techniques of those alternatives.

After we get to that part, we issue a proposed plan, which, like Pat said, all of you, hopefully, picked up outside and we have a 30-day comment period.

The point is to make all the information available, not only what our alternative is, but other alternatives we've looked at and all the background, which is available at the local library right now.

We allow the community about 30 days to comment, and then all those comments will be addressed in the final record of decision, which lays out this is what the EPA says has to be done, this is what it is going to be doing, and it is based on all the work we have done and, also, the comments we received from the public.

After that, we move into design, which is more the technical energy phase. We say here is what we think should be done. Then we have to have a technical design.

Usually, if it is a pier site, they submit it to us and make sure it is appropriate and then we move on to remedial action, which is actually building the pump and treatment plant.

Day construction begins until

the day construction is finished. That’s the remedial action of that.

When construction is finished, we consider the remedial action done, although we are still cleaning up the site and we go into operation and maintenance where we monitor the remediation and monitor and make sure the site is cleaned up or being cleaned up as we said, it should be in the written document.

That’s basically was it is. The Superfund itself I’m going to talk a little bit about the specific site and what I know about the site, although we do have Sal here, who used to work for the EPA and he’s the one that got the site on the Superfund.

In 1941, it was purchased by someone named Patrick Marone, who later sold it to Inmar Associates, or a predecessor of Inmar Associates, and they were using it for solvent and refining recovery.

In 1970, SCP leased the site from Inmar Associates for processing industrial waste and the site was closed in 1980 by court order. Do you remember why? I couldn’t find out why.

MR. BADALAMENTI: I don’t remember why.

MR. GORIN: It was interesting to me.

Then in 1983, Sal placed the site on the Superfund list, and later in 1985 the EPA issued letters to 141 potential responsible parties.

This site has a lot of responsible parties, and we offered them the opportunity to do remediation of the Superfund site agreement. 108 consented to do it and 31 said no, and the EPA issued a unilateral order to work with the 108 to do it.

Then, in 1985, EPA ordered Inmar Associates to remove some tanks that were remaining on the sites, and I think he got rid of most of those tanks in 1986 shortly after the order, and then the last one had a lot of PCP contamination.

We really had no place to send that until about 1998, and as soon as we found a facility that would take that, we shipped it off. So that's in 1999.

In 1987, the PRPs began the remedial investigation of the oversite where they looked at, like I said, the site itself.

The contamination--we found the site had a lot of contamination and a lot of rubble and a lot of sludge, and it was basically an extremely complex site with a lot of problems that we are going to have to deal with to figure out how to clean it up and then something strange happened here. I'm not sure of all the details.

In 1990, the remedial investigation was issued. Usually that comes first. I will talk about that first, even though it came after the feasibility study and that remedial investigation.

Like we said, we figured out the site is highly contaminated. It is not homogenous. There's a lot of rubble. There is some sludge areas and there is also some contamination under what we call clay layer area and a till area and that also leads down to the bedrock area. So there is contamination in aquifers below the clay slab on the site.

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We had shallow groundwater contaminated on the site itself and we had rubble, soil and sludge contaminated on the site itself. At that point we decided to break it into two areas.

One would be everything above clay area, which is 15 feet down, includes the rubble site, sludge and the shallower groundwater, which affects the water unit and the deeper unit, we call the till area and the bedrock area, as well as Beach Island Creek.

And now we are going to move back to the feasibility study. During that time, they looked at a whole bunch of ways to clean up the site.

Like I said, it is a very complex site. We identified some areas potentially that had the ability to be either removed or treated, but it was--technically, they weren’t really sure how to do it. But the EPA felt this is the source. This is the source of the contamination groundwater, the contamination of the river and potentially continuing source of contamination in the till area, so something had to be done right away.

In 1990, the EPA issued the interim order, which basically laid out some things we knew we could do right away. The key to this remedy was a containing wall, slurry wall around the whole site, a bentonite slurry wall, and inside is a piling that leans center and that was dug down and repeated into the clay layer.

And there is also along the creek we put a sheet pile wall to keep the soil wall from collapsing and we covered the whole thing with what we call the infiltration barrier, which overlays all sides. If you've been to the site, just basically a heavy duty thick plastic, also sealed in a tracking system. I believe it is five operating wells. And the idea is we are going to pump water, about 1500 gallons a month, and the idea was to keep that inside area nice and dry so that way any water in, shallow groundwater will be drawn into the site as opposed to water in the site going out to the outside area. So we want everything coming in to try to prevent this from leaving the source.

We put wells around it and

monitors to see if this would be effective in preventing the spread of contamination. And the construction of that was completed in 1992.

Since then we have done little things. We removed the final tank. We removed the building on-site. We have been doing continued monitoring. We have been looking at different options that we didn't really address from the 1990 requirement.

I said, "What can we do here? Can we treat?"

We came back to it wasn't a real good way to treat the whole site, but there were hot spot areas or certain sludge areas that were homogeneous and highly contaminated that we were able to treat.

We actually delineated one area, which is probably one percent of the total volume of the site, which had the most volatiles and PCBs on the site and we came up with different ideas how to treat that.

PCBs were proposed to that and we sent it to our science division and they realized I could aerate the sludge and basically seal it in cement.

The aeration removed the volatiles and then by sealing it with cement it prevents the PCBs from leaching out.

The EPA went to the site and found some highly contaminated sludge, brought it back to the lab and tried it in the lab and it was very effective in the lab. We were happy with the results in 2000.

One of the best alternatives the EPA felt was to take the whole area, fix up the containment, make it permanent--Steve will explain how they propose to do that--and treat that one sludge area to prevent that from being the source, even though truly the contaminant for the last 10 years hasn’t prevented anything from coming out.

We know we have this one spot. We know we could do something. We should treat and maybe contain it and everything left on the site, we are leaving a lot of stuff, will be prevented from spreading.

Steve will come up and go through the alternatives a little more.

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MR. FINN: Thank you very much. What I'm going to do is just walk through with the alternatives that EPA asked us to evaluate and were written into what's called actually a focused feasibility study.

If you look in the public library, you will find that document there. That evaluates what can be done in addition to what had already been done back in 1990.

Remember John talked about the construction of the slurry wall around the site and the infiltration over the surfaces which we worked on.

What can be done to turn this into a permanent long term remedy for the site rather than just the interim approach that had been taken in 1990 to address what were the known threats at that time.

So if you--this is in the proposed plan. We had a copy of this already. Basically, there were five different alternatives that were examined and I'm going to talk about four of them. Not a great deal in detail.

I will talk about No. 5,

which is what the EPA is proposing in rather more detail. The first one is simply not to do anything. You think that might be a strange thing to include. But actually the law under which we are operating requires that the EPA examine what if we do nothing. What are the risks to the human health and environment if we don’t do anything?

So that alternative was looked at. I’m not actually going to say anything about it, because the answer is to do nothing really wasn’t the best idea on this site. There were some things that can be done to improve the condition so, therefore, the EPA believed it should be done.

The second alternative to look at was to excavate the entire site. Could we then take the soils--and John mentioned the soil out there. There is a sludge out there. There’s a lot of debris. Some of it is extremely large. The concrete blocks the size of pickup trucks, and so on, could we actually remove all of this and take it away and treat it somewhere. That was number two.

The third one was looked at. As John said, we did identify there was one particular road of the site which actually the reason for this area being what it is is back in the day when it was operated for recycling insolvents and so on, they had a lagoon, actually two lagoons, that were in this particular corner of the site where I guess everything that they didn’t know what else to do with got put in there.

And so we ended up with this nasty soup of sludge in that area, which is what we refer to as a hot spot, not because it is warm in temperature but because the contamination is extremely high in that area, much higher than it is anywhere else.

One thing was to say, "Can we remove that area?" And that material is so contaminated it would have to be insulated and taken off site and incinerated.

In addition to that, we would make the, instead of the plastic that you see across the site right now, which was a temporary measure back in 1990, we’d actually put a proper cap on the site, something that would enable the site to be used in some beneficial way in the future. So that was part of this alternative.

In addition, we wanted to be able to restore the stream bank. If you've been out there, John referred to the sheet pile wall that was constructed along the riverbank.

The reason that was put in there in order to create a work platform to construct a slurry wall. It is the only reason it was put there. It is actually not needed long term permanently but it was needed in order to construct the slurry wall.

We want to restore the stream bank giving it the more natural appearance for the environment so it will look a lot nicer. That will be part of this alternative, and to continue to collect and treat the shallow groundwater.

John mentioned that has been underway since 1990 already. That needs to continue to occur for as long as there is contaminate groundwater on the site. So that was number three.

Number four was to say, okay, rather than dig up this hot spot area, this sludge area, can we treat it where it is?

And, in fact, four and five have that in common. They both involve treating the sludge where it is, on--in situ is the phrase you will read in the proposed plan, and there are two different ways of doing this.

First was to use the technology called thermal desorption, and I will talk a little more about what that is. And alternative five is using a different approach, and this is the one the EPA is proposing as the alternative, which is to use a two-step process.

One using air to remove the volatile, to evaporate off the contamination that will evaporate and you use solidification and stabilization to deal with the contaminants that are not natural and not evaporative and aerate the spot.

Both four and five include the same elements of number three in it, capping the site so it could be reused, restoring the stream bank and using the collected treated groundwater.

So those are the common elements between alternatives three, four, and let’s talk about each of those in a little more detail, and I’m just going to describe them.

And, in particular, rather than walk you through all of the evaluation, I’m just going to highlight the advantages and the disadvantages of each of these alternatives.

If you want to look at this and study it in more detail, the feasibility study in the public library goes through this. It is actually a whole series of criteria that have been established that you look at to compare different alternatives.

This is a very quick synopsis of this thing. The advantage of this number two was to excavate the entire site. Big advantage is that we would remove all the contaminated soil, all of the debris and sludge and so on. That’s quite attractive in one sense.

The disadvantages, though, are that, number one, this would be extremely difficult to implement. You all know the site at least as well as I do. It is a confined site. It is bounded by two busy streets, Paterson Plank Road and Gotham Parkway on each side, Beach Island Creek on the third site, and an operating business on the fourth site. It is a very confined site.

As I mentioned earlier, within this periphery itself you have these massive debris things the size of pickup trucks that we discovered when the slurry wall was built. So it would be very difficult to actually excavate this entire site without being extraordinarily disruptive to the whole community.

In addition to that, because of the high level of contamination, the whole thing would have to be done inside an air containment structure because if that was not done, and, in fact, even if that was done, the risk to the surrounding community associated with the air emissions would be very substantial. So it would be very difficult to do.

The risk of causing pollution in the process of doing this was also significant as well, the potential for releasing contamination to the creek. The potential of releasing contamination, further contamination to the deeper groundwater was substantial with this alternative.

Also, as I just mentioned earlier, associated with doing this large scale excavation, is the large potential releases of organic contamination which would be a high risk to the surrounding community. Also having excavated this material, it would have to be transported off site.

Most of this material is so contaminated there are only a couple facilities that will take it. Both happen to be in Texas.

So we will be transporting this material all the way to Texas and you, obviously, have the risk of all communities between here and there, the potential of spill along the way, and last but not least, it would be extremely expensive to implement this alternative. It will estimate $94 million.

That alternative was looked at but for those reasons was felt not to be favorable. The biggest of those reasons really being the difficulty associated with implementing it. It would just not have worked the way everybody would like.

The next alternative was to look--I apologize, this does not project awfully well--was to excavate the sludge material. This is a cross-section, if you will, through the site.

So you can see a number of features is the creek itself. Here's the sheet pile wall which you see. Here's the slurry wall, which is structured inward of that.

As John said, that slurry wall goes down to the clay slab which exists with the till aquifer and here we have the sludge, which it doesn't go all the way to ground surface.

There's a couple of feet, or something over it, in some areas, but then you have this area of sludge. And all it would be is to try to excavate that tile out.

To do this a couple of things would be necessary. One, again, it would have to be done inside an enclosed structure because the air emissions that would result from this kind of excavation would be substantial.

We couldn’t just let that contamination drift off onto Gotham Parkway and Paterson Plank Road, and so on and so forth. It would have to be contained.

And, furthermore, we have to construct a supported operation excavation in order to excavate out this material and avoid the potential for damaging the slurry wall, which is what’s protecting the creek. So that would be how this alternative would be implemented.

Some of the advantages and disadvantage of this will be on my next slide here. So why don’t I go to that, the advantages of this.

First and foremost, the most contaminated material, this sludge area, and it is substantially more contaminated than any other part of the site, would be removed. How do you want to do that?

The disadvantages in this case, again, difficulties of implementation. Not as difficult, obviously, as excavating the whole site but still substantial.

Again, we would need this containment structure to avoid air emission problems. We would need to have operation excavations to protect the integrity of the slurry wall. The EPA is doing a very good job of preventing contamination leaving the site.

We continue to have some risks of pollution of the creek and of the groundwater associated with doing this.

Just to add one point, this clay layer that underlies the sludge in some places it is as thin as about two feet. About this much.

So one of the concerns with this approach was this operator of this excavator has got to be extremely careful that he doesn't end up overdigging slightly and punch through this clay slab, because if that happens, then you get contamination released to the till aquifer, which ultimately, not locally here, is an aquifer used for water supply. So that was a concern to us.

So we have that potential for release to the creek, potential for release of contamination of groundwater as well.

We continue to have risks to the community associated with air emissions. We looked at that very carefully to see how that would be controlled. There still will be significant risks.

We would be transporting this off site, but, nevertheless, this would be the most contaminated material which would have to be transported off site. The costs obviously are less but still substantial, about $17 million for that alternative.

The other two alternatives we looked at rather than try to remove this material with all the attendant risks to the community with doing that, all the attendant risks of transporting it off site, can we actually treat it? Deal with the contamination without taking it off the site? Two alternatives were looked at as the way to do that.

The first one was to treat it by a technology that’s called thermal desorption. Basically what that is in simplest terms is to heat the material up so that you drive off the contamination and then can collect it and treat it.

The way you do that physically, you install some heating wells, basically holes through the sludge material into which you put electrical heaters, in a simpler sense. Also, there would be a blanket over the ground surface to keep the heat in, and so on, and basically you heat the wells up to about 1400 degrees Fahrenheit.

That, if you will, that sort of cooks the sludge. Sludge doesn't get as hot as that. Sludge gets about 500 degrees Fahrenheit.

You then apply some vacuum to extract from that the organic contamination. It gets driven off by the heat and the PCBs, polychlorinated biphenyl, which John referred to earlier, would also be driven off if we can get the temperature up high enough and you could collect those and treat them.

Collect those vapors, treat

them on-site using a thermal oxidizer, thermal treatment system to destroy those vapors in combination with the carbon absorption system.

So that was the approach that was looked at as one of the ways to treat this material on the site and remove the contamination from it.

This is a fairly new and innovative technology. It has not been done extensively, but we did have extensive discussions with the people that developed this technology and have used it on the other sites where it has been used around the country. Not very many at this point but it has been used.

The conclusions as far as advantages and disadvantages, summary here, first of all, it does treat the most contaminated material that we have on the site. That’s good.

Obviously, by leaving the material there, treating it where it is our risks of polluting the creek and polluting deep groundwater are avoided. The risks to the surrounding communities are limited by that. It also turns out to be less expensive as well.

But the disadvantages to it were a couple. One was, bluntly, uncertainties as to whether or not it would actually work.

As I said, this has not been done on very many occasions and very many sites around the country at this point. As you all know, this site is right next to the creek. The sludge is very wet and that moisture content in the sludge means that a lot of the heat energy that you apply goes, first of all, to just evaporating off the water, and it would take an uncertain amount of time and certainly a lot of energy to deal with that problem.

The other thing, and this was what really the final nail in the coffin of this alternative, was that there’s a lot of oils and what you call organic carbon grease, and so on, in the sludge material. When you heat that up, what you basically end up with producing is an ash which would have clogged the wells.

Remember, you have these heater wells and then you have to be able to extract the contamination through those. When you heat this material up, because of the oil and grease in it, it would seen highly likely that we would have an ash form that would clog up the wells and we would not be able to remove the contamination.

So, in fact, with extensive discussion, the vendor that actually does this agrees that this was not a very good candidate site for their technology.

Also, another risk that was a bit of a concern with regard to if we were able to make this work, draw off the vapors, one of the by-products of the treatment would have been hydrogen chloride because of the nature of the contamination. That’s difficult to treat and could end up in air emissions which would not have been good for the site. That was a lesser concern, but it was something that we were concerned about as well.

So that comes to the last alternative that was evaluated, which is the one that the EPA is preferring at this stage and inviting comments on, which again is to treat the sludge where it is on the site itself, but it uses a two-stage process I’ve outlined here.

The first one involves injecting air into the sludge material, and I will show you some diagrams of how this would actually work. In essence, we are injecting air, mixing the sludge and extracting contaminated vapors. So rather than using heat to drive off the organic contamination, now what we are doing is we are using air to evaporate the contamination off.

That avoids all the problems of clogging with ash and so on. We are not going to create that. We would in the same way collect those vapors and be able to treat them on-site. It would deal--in this case, it wouldn't drive off the PCBs, okay. You need high temperatures to do that. We would be here looking to drive off all the other contamination.

Instead, to deal with the PCBs, there would be stage two of this process where we mix into it lime and cement, which basically solidifies the sludge material and encapsulates those PCBs and other contaminates and prevents them from ever going anywhere in the future. So that would be the second stage of the process.

How this looks in practice, a piece of equipment that would be used to do this, shown in a sketch here mounted on a backhoe or a small crane, basically what you have is a rotating shaft which has a series of paddles or augers.

If you've seen sometimes the kind of equipment that's used to construct deep foundations for very large buildings, it is the same sort of general sort of equipment that rotates this set of paddles or augers into the sludge material and then air is injected through the central bar that runs down the middle of the auger.

So we are mixing this up, injecting the air through and then that allows vapors with the organic contamination to move back up through here and you will see this little shroud on the left. It is a shroud that sits at ground surface. It is actually held on the vacuum to collect the vapors, the organic vapors which are released by the mixing and air ejection process. And those vapors are collected and taken off to a treatment system on the site itself. Because they are just organic vapors, they are pretty straightforward to treat. A lot of technology is available so we can deal with those vapors.

So that’s the first stage. And this would be done, you treat this sort of column of material and then the machine moves over and treats one next to it and so on. And you can run this machine for as long as you need to run it to remove the organic contamination.

As John said, we did the study in the laboratory. We did it on a small scale in the laboratory, and we found, actually, within a couple of hours of aerating the material we had driven off just about all of the organic contamination.

What we will do in the field, if the EPA agrees to go forward with this alternative, is that the vapors coming off would be monitored until there aren’t anymore until we have them out of there. That’s the first stage that would be done throughout that area.

And the second stage uses the

same piece of equipment, but now, instead of using air down the center piece, you inject a slurry that contains the lime and cement, and again that's mixed into the sludge.

And, again, we did study this in the laboratory to determine how much lime and how much cement was the optimum amount to end up creating effectively a block of concrete here which prevents any of the remaining contaminants in this area from ever leaving that area, from ever being able to be leach out from the material.

And, as John said, that study was reused by EPA's development and research folks, and they agreed it was a very promising approach for this particular site.

So what are the advantages and disadvantages of this approach? Some of the same things as you've seen before.

Obviously, it treats the most contaminated area. Again, because we are dealing with it in place, the risk of polluting the creek further or the groundwater are avoided.

The risk to the surrounding

community is avoided as well because we don't have the potential for air emissions in the same way.

The other thing that was a significant advantage here, we have proven the effectiveness in the laboratory, and not only that, these technologies have been used at a significant number of other sites.

The closest one I think to here is a site over in Elizabeth, where they use very much the same technology, a site over in Elizabeth within the controlled chemical patrol which was done a number years ago successfully, and the cost is about the same as the preceding alternative, about $7.5 million.

In addition to treating that sludge area, remember there are a few other things that are involved in this alternative, and this is my final slide.

One item that should be on this list and isn't on here is, of course, we still have the circumferential wall all around the site that contains contamination. That's an integral part of the remedies performing extremely well, since it was put in in 1990, and that remains there and that really should be on this list.

But the other items would be the final cap over the site that would allow the site to be used for some commercial purposes in the future and remains to be seen exactly what they are, but it won't look like it does today, to be able to be used for a parking lot or commercial buildings or something like that.

In addition, there would be restoration of the stream bank so that we have a natural channel there without the sheet pile wall that exists right now.

One ancillary benefit, by the way, it would increase the flow capacity from time to time. I know flooding is there. We would be continuing with the traction and treatment of shallow groundwater.

In order to allow future use of the site, all of the structures that are involved with removing that groundwater would be placed below ground so that they don't interfere with any future use of the site.

And last, but by no means least, obviously, there would be continued monitoring of the site. As John pointed out, there is a network of wells around the site and the creek continues to be monitored on a very regular basis and would be in the future. So that's my summary.

Questions for John or any of us?

MS. SEPPI: Thank you, Steve.

If I could just remind you, Mayor, if you could say your name first before your comments so we make sure we get it for the record.

MAYOR ROSEMAN: William Roseman. The mike, it doesn't amplify. If you want to amplify, there's a mike behind you.

My question really is it appears as though the final proposal is apparently the most likely or the one that seems the most feasible at this point. But yet you talked a little bit about the on-site air being vacuumed out and cleaned on-site, and I would like to know a little more about what that process entails.

MR. FINN: I didn’t say a whole lot about that. I would be happy to.

There really was going to be in that air that’s being removed is what are referred to volatile organic compounds.

There are at least two good ways in which they can be treated on-site.

MAYOR ROSEMAN: Does that mean PCBs?

MR. FINN: That does not mean PCBs. PCBs are not volatile. They are all being removed.

Certainly there are two very straightforward ways in which those vapors, can be treated on-site, and I don’t think the EPA has made a decision yet as to which one or possibly even both we could use.

One is to use thermal desorption, thermal treatment of this, which destroys old vapors, reduces them to a compound, like water, by thermally treating them.

The other way to do it is to use what’s referred to as carbon absorption so that the vapors and/or organics are absorbed onto carbon, onto charcoal, if you will. Then that carbon, that charcoal actually gets taken off site to the vendor that provides it and they are actually--what the vendor then does they remove the organics from that and they thermally treat them in their facility.

So those are the two primary alternatives for how that would be done.

MAYOR ROSEMAN: When you say organic substance, can you give me an example?

MR. FINN: The sort of thing we are talking about would be things like, on this site, would be things like trichloroethylene, TCE. You might have heard that referred to. A similar compound called PCE.

There is also present on this site, we have got things like toluene and xylene. We have got some--Mary, help me out. We have some benzene, some of the things that show up in gasoline and so on.

MAYOR ROSEMAN: Are any of them suspected carcinogens?

MS. OLSEN: Some of them they

fall into different categories based on their toxicity related to the carcinogenicity.

MR. FINN: For example, that list I have, there is benzene is a carcinogen. There are some vinyl chlorides on the site, as well as vinyl chloride carcinogens.

MAYOR ROSEMAN: The reason I ask, and I personally, as the governing body, I don’t think we have supported any one in particular. We are here to learn, obviously.

But my question then is, naturally the concern that we might have, and we really need to be educated in that respect, is it is scary to think that some of these are suspected carcinogens and they are being re-released in the air, and our concern is the effectiveness in which the cleansing of that air is.

MR. GORIN: That’s a good question. This is a question that always comes up because we treat soils like this and we treat water like this at a lot of sites, and, as Steve pointed out, there are two ways we usually treat it.

We effectively burn it, and the other way is to absorb it into carbon and haul the carbon off.

That’s actually a decision we are not going to make at this time. We are going to make it later in the design.

I think it is always a good idea when you go to the design process to meet with the public and say this is where we are going. Whatever design we finally decide, we would have to get all the permits by the statute, this is how much you can release and how protective it would be.

And after we are done with that, we can say is this what we are going to do and this is how we are going to monitor around the perimeter of the site and this is how we can prove to you you are not going to be affected by the volatiles released from that.

As part of the design, we will have ongoing meetings to discuss that sort of thing. That was a good point and that was one of the concerns with the other remedies.

Those are very difficult to

control, the volatiles coming off the sludge area. In this one it is easy. It is going to be sucked up a hose and with the hose it is pretty easy to do as opposed to what to do with it inside a--what I’m trying to say, the answer is this one we feel we can easily treat the volatiles, and how we are going to do that, we will probably come with a design and we will meet with you, and if you are not happy with that--

MAYOR ROSEMAN: It is more a matter of not knowing. My guess is that--I mean, there is no system that’s perfect, and my assumption is that inherently some potential carcinogens will probably escape. My guess is you can’t control that.

But then we would like to know at what rate and what is the risk factor.

MR. GORIN: That’s what we will determine during the design. You are right. You can’t say zero release. You can’t say that when you are pumping gas there’s no benzene released.

What we can do is say what is the risk? What we would consider is the risk and what would be something we are comfortable with.

We are not going to put the community at significant risk, and that's what Marian does.

MS. OLSEN: What we can do is calculate how frequently a person would be exposed, what the frequency of the exposure would be, the calculation of the associated risk, and then we could set a concentration that says it should not be above that, and for the whole design process it should be largely to make sure everybody is safe, and we've done that at other sites.

MS. O'CONNELL: We have two levels of protection. There is also concern for the workers while working right with it, so OSHA would apply to them for the protection. Those are always closely monitored as work sites.

And regardless of the determinations we have to make later with respect to how we treat the air, there is always perimeter monitoring, especially at a site like this where there's businesses and there are people in the community surrounding it. It is a populated area.

There will be significant monitoring and constant, I would expect, monitoring around the periphery of the site while work is ongoing. So there will be on-site protection for the workers and definitely it will get monitoring. And if any levels that are to be established were exceeded, the project would be shut down. That would be a priority.

MAYOR ROSEMAN: I don’t mean to monopolize the questions, because the on-site protection I’m sure is such I’ve seen them working in their white suits and the masks. People see that and say, Oh, my God those people are in suits.

MS. O’CONNELL: I’m five feet away on the sidelines.

MAYOR ROSEMAN: My next question, and I thought maybe I should give somebody else a turn and I will ask my next question.

MS. SEPPI: Does anybody else have a question or a comment?

MR. CHARI: I looked at this

report at this library in the transcript, and I found that the recommendation of No. 5 process with the SE 5, now this one I think it is certain, first thing you got to use hot air.

MR. FINN: Not necessarily.

MR. CHARI: And the second one is when you put hot air through a hose--the hole in the ground, it is probably six inches down, right?

MR. FINN: Okay.

MR. CHARI: What is the damage to all of those?

MR. FINN: It might be somewhere in the region of four feet, something like that.

MR. CHARI: When you have channeling of the air, you will not be able to have uniform distribution because--so, of course, you will say that this can be contracted by increasing the time.

So this way approximately it will become completely motivated, but I think my question is the next thing comes in terms of costs.

PUBLIC MEETING

In your report here you say on page 12, on first paragraph, “We, the EPA, believes hot spot treatment as described in SE 5 will be effective as a remedial action, if appropriate, for standards for treatment solidification and if containment are not met, then remove the hot spot as described in SE 3, will be performed.”

So, to that extent, the fault point is either SE 5 works for the seven-and-a-half million dollars or the seven-and-a-half million dollars in SE 3, which is $16.7 million.

When I look at all these things, you are overly optimistic to think that SE 5 will work and I believe SE 3 will be the process to be using.

In fact, I’m going to write a letter to you. It will be coming from me. I’m telling you SE 5 should not be used for these reasons.

And also another important part, you will notice in Burlington there is an information latex site and now it has gone on for about 20 years. I live in Rutherford, so I know a little bit about this.

I don’t work in this part of New Jersey. I work somewhere else, in New Brunswick side, and then you found Burlington property, 10 acre of land now they say it is worth about $43 million. So that comes to around four million dollars per acre.

Now the property value and property size here is six acres. So on that basis, six times four is $24 million.

So, to that extent, I would say SE 3 is a bargain if you can get it for $16.7 million and SE 3 has a number of advantages. And I think SE 3 should be the next one in which EPA should concentrate its efforts.

So that’s way I look at his report and I found, are we missing anything, and I find yes. We will be missing a lot, and I recommend SE 3.

MS. SEPPI: Your name?

MR. CHARI: My name is.

MR. CHARI: Chari. S-A-M, last name C-H-A-R-I. I have my business here in

Rutherford.

MS. SEPPI: Thank you very much for your comment.

MR. LAHULLIER: Craig Lahullier.

Going back to the SE 5 are what kind of dimensions? What kind of area are we looking at for that lagoon that we said is the hot spot?

MR. GORIN: 4800.

MR. CHARI: 85 by 95.

MR. LAHULLIER: 85 by 95, and you are talking an auger, or whatever, on this machine that is only going to do a four-foot diameter hole.

MR. GORIN: One diameter and it is going to go--

MR. LAHULLIER: You are going to keep moving this thing. You don’t move it all after the slurry of concrete would be put in, so you would actually totally clean one hole.

You would inject the concrete into the one hole, then you would move your equipment right next to it and start another hole. Is that how it works?

MR. FINN: Let me just clarify.

It is a two-stage process, the first stage of which is to remove the organic contamination. That will be done everywhere to start with.

And part of the answer to this gentleman’s question is that we would do the work in one location. You can then move over. You don’t have to move over four feet. You can move over two feet and go down and at the end you get overlapping, and, in fact, that’s what would be done.

It would be done in an overlapping grid pattern and you would go over the entire area to remove the organic contamination first.

That would be stage one. You do that, the entire area so you will be sure you dealt with that.

Then you go over the entire area on the second pass and produce the vapors.

MR. LAHULLIER: This is the

normal procedure. This has been done all over the place already.

MS. FONTANA: Once you pull out of the first and second hole, isn't it now exposed so those chemicals or whatever it is that you are going to encapsulate are now free to the air?

And is any of this--I notice one of these things that required a full canopy and then I think one of them would be the more localized canopy.

Can that be something that can be used over this hot spot?

MR. FINN: The important thing, we've got a couple of different sorts of contaminants presently. We got volatile contaminants, which we must keep controlled, okay, and that's the focus of stage one of this, to deal with the volatile contaminants.

And you won't move from one location to the next location until your monitoring showed that all of the volatiles that are going to come out of the ground there are out of the ground. So then you could safely move without the risk of further release.

Now, the other contaminants would remain and need to be treated with the lime and cement, primarily PCBs, and they are not volatile. So they would not stay.

MR. LAHULLIER: To someone that probably hasn’t seen this process get done, you are saying you could move two feet, not a whole four feet or whatever, but if I have a four-foot hole and I got this mixer in there doing whatever, blowing air in and getting all the volatile organics out and I move two feet over and I start mixing, now I’m mixing two feet of the hole I just did but now I have a six-foot hole?

MR. FINN: You don’t have a hole. You are not actually removing any material, okay. Think of it more in terms of a food mixer in a bowl, a cake or whatever. You are not removing the dough. You are mixing the dough. We are not removing the sludge. We are mixing the sludge in place without removing it so you don’t have a hole.

I’m sorry. If--

MR. LAHULLIER: It just seems hard to fathom how that can clean that well by--you are still blending two feet of your hole that you just had nice and clean and you move over two feet, it seems like you are still blending now the dirty material with two feet of clean material.

And it just seems hard how you can actually get that cleaner while also having a vacuum cap over the area you are doing trying to pull up all this stuff that is percolating up through the soil.

It just seems awfully hard to fathom how it can work that well. It really does.

MR. FINN: It really does work. It is done by specialist firms that do this stuff. We have done it a lot of times before.

The actual distance is how far you move and so on. So, a combination of things.

One, you obviously, if you really have completely cleaned an air, you don't--

MR. LAHULLIER: Recontaminate it.

MR. FINN: --recontaminate it. At the same time this gentleman here was saying you are injecting air in the middle.

Have you cleaned all the way to the edges of the four feet the same as you have right in the middle? Maybe not.

So, therefore, you would want to overlap a little bit. So you can see there is a little give and take.

MR. LAHULLIER: Just while this process is going on, say you get half done, or whatever, and we have a flood condition because we are talking of a flood area down there where the groundwater comes up, washes all this.

Now, is the wall that's around this area that tight that--what happens with the water that falls inside the contained area, that would go in and rerinse all the clean work with dirt again?

MR. FINN: We have right now a bib by the site. If you look through the fence, you will see that we have the black plastic cap over that.

The purpose of that is to stop rain water from infiltrating into this area. The slurry wall does work very well.

The water levels inside the site are lower than outside and we have monitoring locations inside and outside to check the containment. So the idea that John mentioned, you get flow into the system and not flow out.

MR. BADALAMENTI: Sal Badalamenti. I'm interested in the basis of the seven-and-a-half million dollar cost estimate.

I assume that includes the process of aerating it and treating it?

That's not the operation and maintenance part, correct?

MR. FINN: There are some ongoing operations of maintenance costs associated with continuing to monitor the site afterwards.

The predominance of that cost is up-front capital costs associated with the cleanup of the sludge and then contracting the final cap over the area and the stream line.

MR. BADALAMENTI: What is the duration you estimate for this process to take for that cost to be established?

MS. O’CONNELL: Thirty years.

MR. FINN: I imagine the construction period, as far as implementing this remedy as the proposed plan says one year. That essentially means one construction season it could be done in. I don’t wouldn’t think it would be any problems at all completing one construction season.

The annual monitoring costs are projected out here for a period of 30 years. That’s simply a standard number the EPA always uses.

The monitoring would continue for as long as it was needed. Just for calculation purposes, 30 years is all that’s used.

MS. O’CONNELL: That’s our general formula.

MR. BADALAMENTI: Is this the

responsible party paid for the site?

MS. O'CONNELL: Yes, it is.

MAYOR ROSEMAN: I did have a question regarding yours.

The responsible parties who are being held responsible for payment, what consideration does the EPA give to the ability of the responsible parties being able to pay in their decision?

I mean, I will give you an example. If they found they could only get 20 million from the responsible parties, did that have any basis on their decision which to choose to clean the property?

MR. GORIN: That's a fair question.

Cost is a factor. There are like nine criteria when we decide a site. Cost is a factor and for some sites the ability of the PRP to pay.

If a town owned a landfill, we don't want to send a tenant to bankruptcy to clean up a landfill if there was a cheaper way to do it.

As far as a particular site, we settled out de minimis for about--what is it? 60 PRPs. So I believe we have--is that right? I believe we have about 80 PRPs left, names such as Exxon and Mobil.

As far as costs, as far as ability to pay for these particular PRPs, that is not an issue if that's what you are asking.

MAYOR ROSEMAN: I wasn't asking whether or not they would be able to bear the costs.

I'm saying I don't know how the evaluation process is done.

My question really is, in their evaluation of the responsible parties, if they found that they could raise, in other words, if they found the responsible parties had the ability to pay $100 million, would you have made a different decision as to which was the most effective way to clean it?

MR. GORIN: These responsible parties, if it was an actual site that cost $100 million, with these responsible parties, I don't think we would have an issue saying they can afford $100 million.

MS. FONTANA: Would you still do SE-5?

MS. O'CONNELL: What drove this remedy, the responsible parties of this site collectively don't have an ability to pay issue for any remedy we select, for the reason they are very large companies. Cost is a factor.

We consider nine criteria that we go through. This is what you see. We weigh everything out. We review the cost from a cost benefit point of view.

Our primary cost factor is protectiveness. If a remedy isn't protective, it is not going to be considered.

If four remedies are protective, we move on and look at community concerns, state concerns, long-term risks, short-term risks.

There are nine criteria. Cost is a criteria. So, everything else being equal, with two remedies, if one is more cost effective, that would weigh in at that point. It doesn't drive the decision but it is one factor that we need to look at along with everything else and we go through this.

MR. GORIN: I think your hypothetical situation though, suppose you have a PRP and a hundred million dollar remedy is the most effective and they didn't have the ability to pay, that's a good question for this particular site.

If the $100 million remedy made the most sense to the EPA and it was the one to go with, we wouldn't think it was an issue for the PRPs to pay. There's deep pockets.

MS. O'CONNELL: We have other sites where there are responsible parties who have no ability to pay and that's where the federal fund comes in, and if we need to tap into that, that's what we do.

MAYOR ROSEMAN: I wanted to make sure that the EPA wasn't thinking we would love to do this, but we just don't have enough money to do that.

MR. GORIN: If you want to, you can call me tomorrow. I could provide you a list of the PCPs.

PUBLIC MEETING

MAYOR ROSEMAN: Your word is good enough. I was afraid that like maybe the first plan would have been the best plan, but the EPA evaluated it and said, although that's the best plan, you know, we could only put up $16 million, so let's try the fifth plan. But that's not the case.

MS. O'CONNELL: No.

MAYOR ROSEMAN: I just wanted to know we were getting the best plan that's best for the community as opposed to the cost feasibility of it.

MR. GORIN: Any more?

MR. BADALAMENTI: In view of this area potentially being the next future Disneyland, how can we build foundations or commercial property over a slurry wall without destroying the integrity of the whole area?

MR. FINN: Let me respond to that.

The slurry wall is about this thick. So, in terms of building a structure, as long as you don't build it right there, and the slurry wall goes right around the boundary of the site, for some other reason you couldn’t build that close to the edge anyway, the slurry wall is not going to be a major factor.

The other thing that might influence you is that we are going to have to for sometime continue to remove shallow groundwater from the site so we have a series of wells on the site.

I did mention in passing that all the piping associated with that replacement is below grade.

What I didn’t mention is that the locations of those wells and of the piping is, again, going to be focused around the perimeter of the site, which wouldn’t be developable anyway, in order to maximize the opportunity for the future use of the site.

I can say we are trying to think future use all the time, but we don’t know exactly what it is going to be.

MS. O’CONNELL: You also need to understand the containment remedy needs to be maintained for the long term in order for this remedy to remain protective. It is a containment just completely encapsulate it?

MR. GORIN: Are you asking about the creek?

MAYOR ROSEMAN: Not the creek. I was just using that as an example. That they decided not to fool with it or disturb it, so to speak, because in disturbing it they would be releasing the mercury into the water and creating additional problems.

My question really is why aren't you? I'm not suggesting it. I would just like to know why. Why you just don't put a four-foot cap of concrete around the whole thing?

MR. GORIN: Without treating the hot spot?

MAYOR ROSEMAN: Yes.

MR. GORIN: Why are we treating the hot spot as opposed to the mercury? That's a good question. That's one that I thought.

I think the main issue, or the main issue, we know and we feel and we have experienced treating, as Steve explained, the hot spot like this effectively and safely, and so we are confident we can do it.

And, number two, it is highly contaminated. As Marian has pointed out, it is one of the most contaminated spots that we have seen and I think there is a feeling this is an area we know we can easily treat.

It is homogenous. It is something that is doable. It is going to cost some money. That’s fine. We can treat it and make it safer.

If something does happen, which we don’t expect it will, we can do it. Let’s do it. That’s one area that has most of the contamination.

Fortunately, it is something everyone--one area we feel we can. So after that it is most likely described.

MS. MAHABIR: Karen Mahabir from The Record.

Does it get more nasty as time goes on?

MR. GORIN: With what?

MS. MAHABIR: Does it get more toxic and gross the longer it stays under there?

MR. GORIN: The contamination that's under there?

MS. MAHABIR: Yes.

MR. GORIN: Marian can probably answer this better.

Some break down to less toxic chemicals. Some become more like vinyl chloride. It depends on the chemicals.

MS. MAHABIR: This method is relatively new, this going into the ground and pushing the air in and all that.

Is there any completed examples anywhere? Have there been any recurring problems? Is there anything that's liked popped up after it's all been finished that we might want to know about?

MR. FINN: The technologies that are involved here have been around certainly since the 1970s. So, in various forms, this has been going on for quite sometime in terms of other Superfund sites.

I think there's somewhere like 20 maybe around the country where this has been done.

I think I did mention in passing the nearest site to it would be the site in Elizabeth. I'm not sure, but I haven't researched all 20 sites, but I'm not aware of any where there have been long term problems.

That was certainly a question that was raised by the EPA, and we looked into that in order to establish that we didn't anticipate that.

MR. GORIN: We actually found one issue in certain sites that had high volatiles like this. The volatiles weren't treated enough to high level.

Like Steve described, we are going to treat and move cement. If you don't treat, it doesn't solidify, so there are issues with that.

We are going to make sure we get it down and we have been working with the EPA's science department to get it down to a level we are confident it will solidify.

I think she said below one percent. There is no reason to believe that we can’t get below one percent.

MS. MAHABIR: There is just this one area, one lagoon?

MR. GORIN: This one lagoon. The whole site.

MS. MAHABIR: This particular one area, that is gross.

MR. FINN: We looked back historically at the aerial photography of the--as John said, this site started in the ′40s. We have aerial photographs for a long period of time.

There are actually two lagoons which were right next to each other so they ended up at one messy spot, but technically one lagoon.

MS. MAHABIR: How deep into the ground?

MR. FINN: Fifteen feet.

MS. MAHABIR: Pretty close.

MR. GORIN: That’s from the surface down.

MR. BADALAMENTI: You mentioned the glacial till area is an aquifer.

Where is the closest downgrading drinking water, portable water well?

MR. FINN: You are taxing my memory slightly.

We did a well search of the New Jersey Department of Environmental Protection. They maintain records, as I'm sure you know being a former EPA guy, of all the ground wells that exist, so a well search was done.

I don't think there is anything within, certainly not within a half mile of the site, maybe within a mile of the site, and there is--you have a number of monitoring wells within the till aquifer around the boundary of the site.

None of those would indicate the contamination spread anything like that far. So there are no water wells that are known to be any risk at this point.

MS. O'CONNELL: We would like to thank everyone for taking the time to come out and contribute.

As Pat said in the beginning,

our public comment period closes on the 15th. If you or anybody you know has any questions, comments, John Gorin's telephone number is here.

Our address is in the back on the last page in the box on the proposed plan. Please feel free to call or send comments in writing through the 15th.

If anybody that you know of is interested in discussing anything with us, please contact us through that date and we will be happy to speak to them.

(Time noted: 8:20 p.m.)

C E R T I F I C A T E

I, MICHAEL WILLIAMS, a Certified Shorthand Reporter and Notary Public of the State of New Jersey do hereby certify that the foregoing is a true and accurate transcript of the within proceedings, to the best of my ability.

Michael Williams (CSR)

MICHAEL WILLIAMS, CSR
License No. XIO1991
Notary Public of the
State of New Jersey

Word Index

ATTACHMENT D
WRITTEN COMMENTS

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September 27, 2001 Project No.: 943-6222

Mr. Jon Gorin
U.S. Environmental Protection Agency
29 Broadway, 19th Floor
New York, NY 1007-1986

RE: SCIENTIFIC CHEMICAL PROCESSING SITE, CARLSTADT, NJ
PROPOSED PLAN

Dear Mr. Gorin:

Thank you for the opportunity to comment on the EPA Proposed Plan for the Scientific Chemical Processing Site. On behalf of the 216 Paterson Plank Road Cooperating PRP Group (Group), this letter requests clarification of certain statements within the Proposed Plan for the above site released in August, 2001 by EPA for public comment.

On page 10 of the Proposed Plan EPA correctly notes that there are no chemical-specific applicable or relevant and appropriate requirements (ARARs) for the contaminated soils. Reference is nonetheless made to the New Jersey Soil Clean-up Criteria (NJSCC) in the context of Alternative SC-2. EPA notes that the NJSCC are To Be Considered (TBC) criteria. We would like clarification, for the record, that the NJSCC are not ARAR and will not be used to set clean-up standards, particularly for EPA's Preferred Alternative, SC-3.

EPA also notes on page 10 of the Proposed Plan that all of the alternatives must comply with the New Jersey Technical Requirements for Site Remediation, N.J.A.C. 7:26E *et. seq.,* the New Jersey Brownfield and Contaminated Site Remediation Act, N.J.A.C. 58:10B and any relevant local requirements. We would appreciate EPA's clarification that, in accordance with CERCLA and the National Contingency Plan, compliance is only required with the substantive requirements of promulgated state requirements that are applicable or relevant and appropriate (ARAR) and more stringent than promulgated federal standards. Aspects of the cited regulations that are not ARAR, as well as non-substantive (e.g. administrative permitting requirements) are therefore not mandatory.

We appreciate the opportunity to comment upon the Proposed Plan and look forward to continuing to cooperate with EPA on the remediation of this challenging site.

Very truly yours.

GOLDER ASSOCIATES INC.,

Brenda Bunyon

For P. Stephen Finn, C. Eng.
Facility Coordinator

cc: Cooperating PRP Group

Sam Chari, Ph.D., P.E.
12 The Terrace
Rutherford, NJ. 07070
Tel: (201) 935-4731

September 12, 2001

Mr. Jonathan Gorin
Project Manager
U.S. Environmental Protection Agency
290 Broadway, 19th Floor
New York, NY 10007

Re: Superfund Program – Proposed Plan
Scientific Chemical Processing Superfund Site
Carlstadt, New Jersey
Written Comments on the Proposed Alternative

Dear Mr. Gorin:

As you may recollect, I attended the Public Meeting held by you at the Carlstadt Municipal Building, 500 Madison Street, Carlstadt, New Jersey, on August 23, 2001, in which you discussed the Proposed Plan.

At that meeting, I gave my oral comments on EPA's Proposed Plan and recommended that EPA should use Alternative SC-3, Excavation of Hot Spot Area/Capping, and Shallow Groundwater Collection should be used instead of the Alternative SC-5, Air Stripping, Solidification/Stabilization, Capping and Shallow Groundwater Collection recommended in your tentatively Proposed Plan. I also told you at the meeting that I would also send my Written Comments to you making this recommendation.

I have now examined and reviewed all the site related documents, which were provided by you at the William E. Dermody Free Public Library, 420 Hackensack Street, Carlstadt, New Jersey.

Based on this study, I strongly recommend that Alternative SC-3, Excavation of Hot Spot Area/Capping , and Shallow Groundwater Collection should be used because of the following reasons:

1. **<u>Disadvantages of Alternative SC-5, Air Stripping, Solidification/Stabilization, Capping and Shallow Groundwater Collection recommended in EPA's tentatively Proposed:</u>**

    1.1 Lack of homogeneous nature of the soil will lead to insufficient Air Stripping, due to channeling of the air during Air Stripping, and the contaminants will remain in the ground even though they will be partially immobilized during the subsequent stages of Solidification/Stabilization, Capping and Shallow Groundwater Collection.

1.2 There is no assurance that rocks and small and large stones, and metal objects and metal or plastic drums and debris will not be encountered in the “sludge area” which is approximately 4,000 square feet in areal extent and which has an average thickness of 10 feet and which has a sludge volume of about 1,480 cubic yards. Due to these problems mechanical breakdowns may be encountered in the operation of the Auger in the Air Stripping process.

1.3 The load carrying capacity of the “sludge area” will be very small and more problems of mechanical breakdowns may be encountered in the operation of the Auger and related equipment in the Air Stripping process.

2. Advantages of Alternative SC-3, Excavation of Hot Spot Area/Capping, and Groundwater Collection:

2.1 The primary advantage of Alternative SC-3 is that the “sludge area “ soil will be excavated and removed from the site, and the area will be filled with clean fill, and capped and the groundwater will be also pumped and sent off-site. As mentioned in your report this Alternative, in combination with the existing slurry wall and natural clay layer, will also prevent the spread of contaminants to the surrounding areas of the site or to surface water, thereby preventing any direct exposure to contaminated water.

2.2 In your report and also during your presentation on August 23, 2001, you stated that implementation of SC-3 would entail significant challenges such as instability of the sludge area soils, risk of contaminant migration during construction activities, risk of escape of VOCs during the excavation, risk associated with transporting the sludge to the treatment and disposal facilities, and an Estimated Construction Timeframe of 13 Months for Alternative SC-3 instead of One Year for your Proposed Plan of Alternative SC-5. I have examined these problems once again, and in my opinion these are normal problems for all remediation projects and adequate precautions can be taken to prevent damage to the bottom “clay area”, and that Alternative SC-3 can be completed within budget and within in time, and I therefore recommend this Alternative SC-3.

2.3 In your report and during your presentation on August 23, 2001, you stated that “while EPA believes the Hot Spot treatment described in Alternative SC-5 will be effective, as in any remedial action, if appropriate performance standards for treatment, solidification and containment are not met then removal of the Hot Spot, as described in Alternative SC-3, will be performed”. As I stated in the Public Meeting on August 23, 2001, and as I have stated above in these Written Comments under Section 1.1, 1.2, and 1.3, Alternative SC-5 has many disadvantages, and this will probably lead to the adoption of Alternative SC-3 after the commencement of an initial remediation effort using Alternative SC-5, after considerable expense and considerable lapse of time and a number of problems. I therefore recommend that this situation should be averted from the very beginning, and this is one more reason why I recommend Alternative SC-3.

2.4 The Estimated Present Worth Cost using Alternative SC-3 is $16.7 Million. I believe that, even though this expenditure may appear to be a little high compared to the Estimated Present Worth Cost of $7.5 Million using Alternative SC-5, it is lower than the remediation cost for similar property in the Carlstadt, New Jersey, neighborhood. Thus the 10-acre Industrial Latex Corporation Superfund Site in Wallington, New Jersey, which is about 4 miles from the SCP Superfund Site in Carlstadt, New Jersey, costs according to Newspaper reports of last month $43.0 Million. The Estimated Present Worth Cost using Alternative SC-3 is $16.7 Million for 6-acre SCP Superfund Site in Carlstadt , New Jersey. In my opinion this Cost seems to be therefore reasonable, and I therefore recommend Alternative SC-3.

2.5 The Estimated Construction Timeframe using Alternative SC-3 is 13 months and is comparable to the Estimated Construction Timeframe of One Year using Alternative SC-5. In my opinion this Timeframe seems to be therefore reasonable, and I therefore recommend Alternative SC-3.

I therefore strongly recommend that Alternative SC-3, Excavation of Hot Spot Area/Capping, and Shallow Groundwater Collection should be used instead of the Alternative SC-5 proposed by you. Incidentally, if necessary, I can also work for EPA, since I live in Rutherford, New Jersey, which is close to Carlstadt, New Jersey, as well as to your office in New York City. If you have any questions, please write to me or call me.

I request you therefore to consider these Written Comments on the Proposed Alternative favorably, and once again recommend Alternative SC-3.

If I can be of any help, please write to me or call me.

Sincerely yours,

Sam Chari

Sam Chari, Ph.D., P.E.